
ASGARD Broker Network Manual

Nextron Systems

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Beginning from the Version 2.14.0 of the ASGARD Management Center, you can install a Broker Network in your environment (a special license is needed for this feature). This is designed to be your gateway which is placed in front of the ASGARD. You can use this for multiple Scenarios:

- Multiple Brokers for load balancing
- Multiple Brokers for load sharing
- Internet facing Broker for remote clients
- DMZ facing Broker

In the following chapters we will describe how to set this network up.

BEFORE YOU BEGIN

This is an introductory chapter to the ASGARD Broker Network. Please read this chapter before you start installing or even configure your new ASGARD Broker Network

This chapter contains Hardware Requirements, Licensing and other topics.

1.1 Before You Begin

1.1.1 Agent to ASGARD Communication

There are a few things to consider before you start with the installation of you Broker Network. The communication between the ASGARD agent and the Broker Network is unidirectional. The ASGARD agent polls ASGARD, or one of the Brokers if configured, in a given time frame and looks for tasks to execute. There is no active triggering from ASGARD or the Broker(s) to the ASGARD agent – we have designed it that way, because we believe that opening a port on all connected endpoints should and can be avoided.

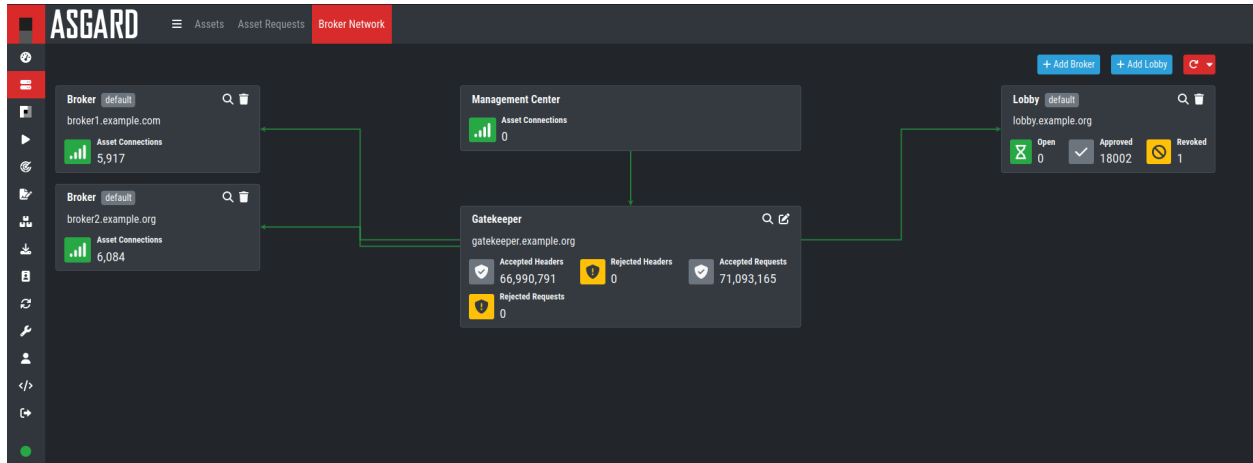
The Broker Network acts as a gateway between ASGARD Agents and ASGARD itself. This allows for more flexibility within your ASGARD environment, such as remote agents which are not using a VPN, or a dedicated Broker in your DMZ.

If an ASGARD Agent is configured to work with your Broker Network, it can still connect directly to your ASGARD if the Broker can't be reached.

Overview of the Components

There are three components which are needed for the Broker Network:

- **Lobby** - New ASGARD Agents will get a certificate for a secure communication from the Lobby. An administrator can accept the agents or configure the auto-accept option. Certificates for agents can also be revoked here.
- **Gatekeeper** - The Gatekeeper is used to communicate directly between all the components. Certificates and Revoke Lists get picked up from the Lobby and are being pushed to all Brokers.
- **Broker** - Your Broker is the component which your ASGARD Agents directly communicate with. Once an ASGARD Agent received a valid certificate from the Lobby, communication is possible. You can have multiple Brokers configured.



1.1.2 Using a Proxy between ASGARD Agent and ASGARD

ASGARD supports using a standard HTTP proxy for the entire Agent to ASGARD communication. In order to use a proxy, the ASGARD agent must be repacked after installation. For details, see [Agent Installer](#).

1.2 Hardware Requirements

You can find the hardware requirements for all of the components below.

1.2.1 ASGARD Broker Hardware

The required hardware for your Broker depends on the setup you are choosing.

If you want to use only one Broker, you can use the hardware requirements from the table below. If you want to use multiple Brokers, you can split the hardware requirements evenly among your Brokers. This scenario might be useful for networks with multiple segments to keep a proper segmentation.

Connected Endpoints	Combined Hardware Requirements
up to 500	<ul style="list-style-type: none"> - CPU Cores: 1 - System memory: 4 GB - Hard Disk: 80 GB
up to 10,000	<ul style="list-style-type: none"> - CPU Cores: 4 - System memory: 6 GB - Hard Disk: 200 GB
up to 25,000	<ul style="list-style-type: none"> - CPU Cores: 10 - System memory: 16 GB - Hard Disk: 500 GB

Your Broker uses roughly 1 CPU Core for 2,500 agents. Generally we do recommend to use the approach with multiple smaller Brokers instead of one big Broker.

Example: For an environment of up to 10,000 agents, you can use the following hardware (per Broker; assuming all 10,000 agents communicate over the Broker Network):

- 1 Broker

- CPU Cores: 4
- System Memory: 6 GB
- Hard Disk: 200 GB
- 2 Brokers
 - CPU Cores: 2
 - System Memory: 3 GB
 - Hard Disk: 100 GB
- 4 Brokers
 - CPU Cores: 1
 - System Memory: 3 GB
 - Hard Disk: 80 GB

Note: Try not to go lower than 80 GB of storage and 3 GB of system memory for your Broker, as this might influence system stability after a while.

1.2.2 ASGARD Gatekeeper Hardware

The ASGARD Gatekeeper uses roughly the same amount of resources as your [ASGARD Management Center](#), apart from the disk space. Please orientate yourself on the configuration of your ASGARD. The recommendations are the following:

Connected Endpoints	Minimum Hardware Requirements
up to 500	<ul style="list-style-type: none"> - System memory: 4 GB - Hard disk: 200 GB - CPU Cores: 2
up to 10,000	<ul style="list-style-type: none"> - System memory: 8 GB - Hard disk: 250 GB - CPU Cores: 4
up to 25,000	<ul style="list-style-type: none"> - System memory: 16 GB - Hard disk: 300 GB - CPU Cores: 4

1.2.3 ASGARD Lobby Hardware

Hardware	Amount
CPU Cores	2
System Memory	4 GB
Disk	80 GB

1.3 Network Requirements

The ASGARD components use the ports in the following chapters. For a detailed and up to date list of our update and licensing servers, please visit <https://www.nexttron-systems.com/resources/hosts/>.

1.3.1 ASGARD Agent

Description	Port	Source	Destination
Agent to Server communication	443/tcp	ASGARD Agent	Broker / ASGARD
Retrieve certificate	443/tcp	ASGARD Agent	Lobby

Warning: Your agents will always try to contact your ASGARD directly, and if this fails, they will try the Lobby or Brokers. If you are deploying agents with a broker network configuration in your internal network, and they **can** contact the ASGARD directly, they will not be able to get a valid certificate from your Lobby. This is not an issue if your Lobby is exposed to the internet and your agents will be able to request a certificate once they are connecting from the open internet.

If your Lobby is not exposed to the internet, the agents **must not** be able to contact your ASGARD directly, but rather your Lobby. To do this, you have to ensure your agents will not be able to communicate directly with your ASGARD, but only directly with the Lobby and a Broker (e.g. your ASGARD sits behind an internal Broker and can not be reached directly).

It is important to remember that your agents need a valid certificate from your Lobby, otherwise the Broker connection can not be established. This "onboarding phase" is happening once during the initial communication, so that your agents can get their unique key material for the secure channel within the broker network. For more information on how the Lobby operates, see the chapter [Using the Lobby](#).

The following priorities of servers your agents try to connect to are in place:

Server	Priority	Info
ASGARD	1	Always highest priority
Lobby	2	If agent has no Broker Certificate
Broker	3	If agent has Broker Certificate

1.3.2 Gatekeeper

Description	Port	Source	Destination
- Statistics	12000/tcp	Gatekeeper	Lobby
- pull CA ² and CRL ³			
- Statistics	12000/tcp	Gatekeeper	Broker
- push CA ^{Page 7, 2} and CRL ^{Page 7, 3}			
Create secure tunnel per client	12001-1200x/tcp (x = CPU count of Broker)	Gatekeeper	Broker

Note: Your Gatekeeper is receiving the root CA certificate, client certificates and CRL from the Lobby. Those are then being transmitted to the all Brokers via the Gatekeeper, to keep an up to date state of allowed and revoked agents.

1.3.3 ASGARD

Description	Port	Source	Destination
- Backend management of Gatekeeper, Broker and Lobby - Agent communication	12000/tcp	ASGARD	Gatekeeper

1.3.4 Management Workstation

Description	Port	Source	Destination
CLI administration	22/tcp	Workstation	Broker
CLI administration	22/tcp	Workstation	Gatekeeper
CLI administration	22/tcp	Workstation	Lobby
Web administration	9443/tcp	Workstation	Lobby

1.3.5 Internet

The Broker Network components are configured to retrieve updates from the following remote systems.

Description	Port	Source	Destination
Product and system updates	443/tcp	Gatekeeper, Lobby, Broker	update3.nextron-systems.com
NTP	123/udp	Gatekeeper, Lobby, Broker	0.debian.pool.ntp.org ⁴
NTP	123/udp	Gatekeeper, Lobby, Broker	1.debian.pool.ntp.org ^{Page 7, 4}
NTP	123/udp	Gatekeeper, Lobby, Broker	2.debian.pool.ntp.org ⁴

All proxy systems should be configured to allow access to these URLs without TLS/SSL interception. (ASGARD uses client-side SSL certificates for authentication). It is possible to configure a proxy server, username and password during the setup process of the ASGARD platform. Only BASIC authentication is supported (no NTLM authentication support).

² Root CA Certificate (CA)

³ Certificate Revocation List

⁴ The NTP server configuration can be changed.

1.3.6 DNS

All the components need to have a resolvable FQDN.

Brokers facing the open internet need to be resolvable with a public FQDN and IP Address, so make sure to configure the necessary A-Records before setting up an external facing Broker and/or Lobby.

1.4 Verify the Downloaded ISO (Optional)

You can do a quick hash check to verify that the download was not corrupted. We recommend to verify the downloaded ISO's signature as this is the cryptographically sound method.

The hash and signature file are both part of the ZIP archive you download from our [portal server](#).

1.4.1 Via Hash

Extract the ZIP and check the sha256 hash:

On Linux

```
user@host:~$ sha256sum -c nextron-universal-installer.iso.sha256
nextron-universal-installer.iso: OK
```

or in Windows command prompt

```
C:\Users\user\Desktop\asgard2-installer>type nextron-universal-installer.iso.sha256
efccb4df0a95aa8e562d42707cb5409b866bd5ae8071c4f05eec6a10778f354b nextron-universal-
↪installer.iso
C:\Users\user\Desktop\asgard2-installer>certutil -hashfile nextron-universal-installer.
↪iso SHA256
SHA256 hash of nextron-universal-installer.iso:
efccb4df0a95aa8e562d42707cb5409b866bd5ae8071c4f05eec6a10778f354b
CertUtil: -hashfile command completed successfully.
```

or in Powershell

```
PS C:\Users\user\Desktop\asgard2-installer>type .\nextron-universal-installer.iso.sha256
efccb4df0a95aa8e562d42707cb5409b866bd5ae8071c4f05eec6a10778f354b nextron-universal-
↪installer.iso
PS C:\Users\user\Desktop\asgard2-installer>Get-FileHash .\nextron-universal-installer.iso

Algorithm      Hash
↪Path
-----
↪--
SHA256          EFCCB4DF0A95AA8E562D42707CB5409B866BD5AE8071C4F05EEC6A10778F354B
↪C:\Users\user\Desktop\asgard2-installer\nextron-universal-installer.iso
```

1.4.2 Via Signature (Recommended)

Extract the ZIP, download the public signature and verify the signed ISO:

On Linux

```
user@host:~$ wget https://www.nextron-systems.com/certs/codesign.pem
user@host:~$ openssl dgst -sha256 -verify codesign.pem -signature nextron-universal-
↳ installer.iso.sig nextron-universal-installer.iso
Verified OK
```

or in powershell

```
PS C:\Users\user\Desktop\asgard2-installer>Invoke-WebRequest -Uri https://www.nextron-
↳ systems.com/certs/codesign.pem -OutFile codesign.pem
PS C:\Users\user\Desktop\asgard2-installer>"C:\Program Files\OpenSSL-Win64\bin\openssl.
↳ exe" dgst -sha256 -verify codesign.pem -signature nextron-universal-installer.iso.sig
↳ nextron-universal-installer.iso
Verified OK
```

Note: If openssl is not present on your system you can easily install it using winget: `winget install openssl`.

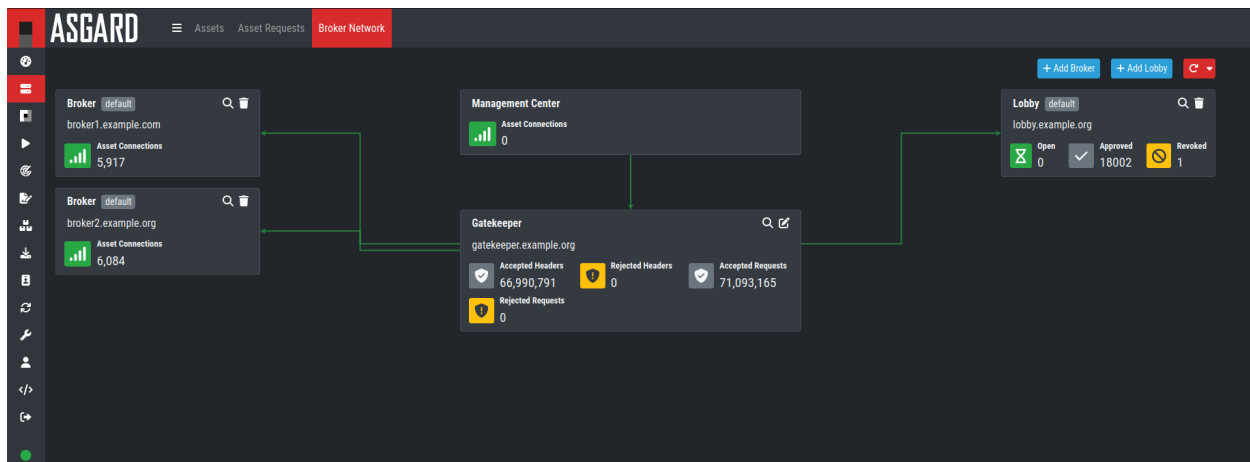
SETUP GUIDE

This chapter contains the setup guide with an example on how to create a new ESXi virtual machine and installing the ASGARD Broker Network Components.

2.1 Overview of the Components

There are three components which are needed for the Broker Network:

- **Lobby** - New ASGARD Agents will get a certificate for a secure communication from the Lobby. An administrator can accept the agents or configure the auto-accept option. Certificates for agents can also be revoked here.
- **Gatekeeper** - The Gatekeeper is used to communicate directly between all the components. Certificates and Revoke Lists get picked up from the Lobby and are being pushed to all Brokers.
- **Broker** - Your Broker(s) are the component which your ASGARD Agents communicate with. Once an ASGARD Agent received a valid certificate from the Lobby, communication is possible. You can have multiple Brokers configured.



In this guide, we will assume a scenario with only one Broker, one Lobby and one Gatekeeper. If you wish to install multiple smaller sized Brokers, you can do so.

2.2 Create a new ESX VM and mount the ISO

Note: This step has to be done three times, we need one dedicated server for each component. Please see [Hardware Requirements](#) for the hardware requirements.

Create a new VM with your virtualization software. In this case, we will use VMWare ESX managed through a VMWare VCenter.

The new VM must be configured with a Linux base system and Debian GNU/Linux 10 (64 bits) as target version. It is recommended to upload the ASGARD ISO to an accessible data store and mount the same to your newly created VM.

New Virtual Machine

1 Select a creation type

2 Select a name and folder

3 Select a compute resource

4 Select storage

5 Select compatibility

6 Select a guest OS

7 Customize hardware

8 Ready to complete

Select a creation type

How would you like to create a virtual machine?

Create a new virtual machine

Deploy from template

Clone an existing virtual machine

Clone virtual machine to template

Clone template to template

Convert template to virtual machine

This option guides you through creating a new virtual machine. You will be able to customize processors, memory, network connections, and storage. You will need to install a guest operating system after creation.

CANCEL

BACK

NEXT

Please make sure to select a suitable v-switch or physical interface that reflects the IP address scheme you are planning to use for the new ASGARD.

New Virtual Machine

✓ 1 Select a creation type

2 Select a name and folder

3 Select a compute resource

4 Select storage

5 Select compatibility

6 Select a guest OS

7 Customize hardware

8 Ready to complete

Select a name and folder

Specify a unique name and target location

Virtual machine name:

Select a location for the virtual machine.

▼  vcenter

CANCEL

BACK

NEXT

New Virtual Machine

✓ 1 Select a creation type

✓ 2 Select a name and folder

✓ 3 Select a compute resource

✓ 4 Select storage

✓ 5 Select compatibility

6 Select a guest OS

7 Customize hardware

8 Ready to complete

Select a guest OS

Choose the guest OS that will be installed on the virtual machine

Identifying the guest operating system here allows the wizard to provide the appropriate defaults for the operating system installation.

Guest OS Family:

Guest OS Version:

Compatibility: ESXi 6.7 and later (VM version 14)

CANCEL

BACK

NEXT

New Virtual Machine

- ✓ 1 Select a creation type
- ✓ 2 Select a name and folder
- ✓ 3 Select a compute resource
- ✓ 4 Select storage
- ✓ 5 Select compatibility
- ✓ 6 Select a guest OS
- 7 Customize hardware**
- 8 Ready to complete

Customize hardware

Configure the virtual machine hardware

Virtual Hardware

VM Options

ADD NEW DEVICE

> CPU *	1	▼	
> Memory *	16	GB	▼
> New Hard disk *	100	GB	▼
> New SCSI controller *	VMware Paravirtual		
> New Network *	VM Network	▼	<input checked="" type="checkbox"/> Connect...
> New CD/DVD Drive *	Datastore ISO File	▼	<input checked="" type="checkbox"/> Connect...
> Video card *	Specify custom settings ▼		
VMCI device		Device on the virtual machine PCI bus that provides support for the virtual machine communication interface	
> Other	Additional Hardware		

Compatibility: ESXi 6.5 and later (VM version 13)

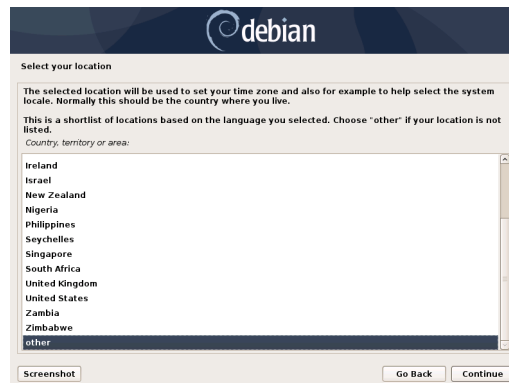
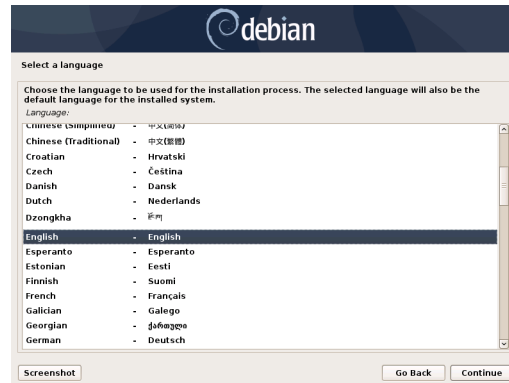
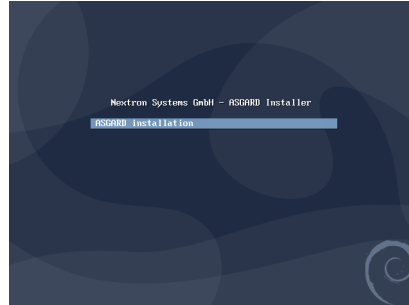
CANCEL

BACK

NEXT

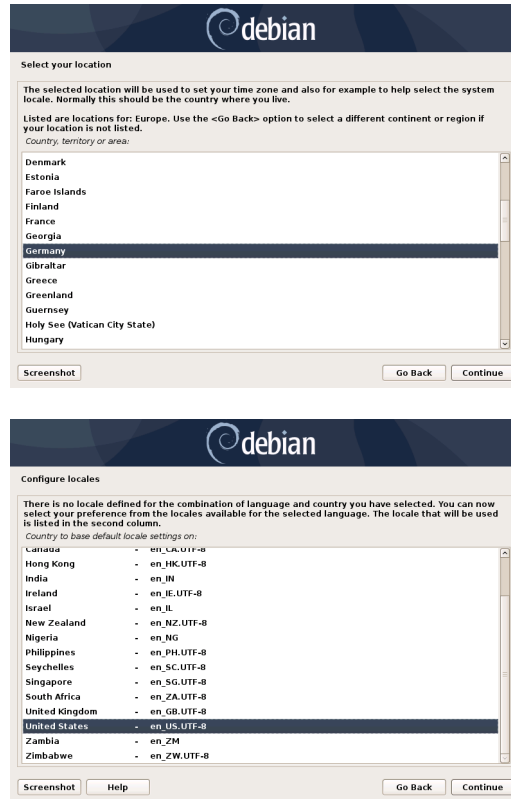
2.3 Navigate through the Installer

The installation Process is started by clicking on ASGARD Graphical install. The installer then loads the additional components from the ISO and lets you select location and language.



Warning: Please make sure to select the correct Country, as this will also set your local timezone!

Note: If DHCP is available, network parameters will be configured automatically. Without DHCP, ASGARD drops into the manual network configuration dialogue. The IP address can be changed later, see [Changing the IP-Address](#)



2.4 Network Configuration



Warning: ASGARD needs to be able to resolve internal and external IP addresses.

Warning: Important: Make sure that the combination of hostname and domain creates an FQDN that can be resolved from the endpoints on which you intend to install the ASGARD agents. If you've configured a FQDN (hostname + domain) that cannot be resolved on the clients, no agent will be able to find and reconnect to the ASGARD server.



Configure the network

From here you can choose to retry DHCP network autoconfiguration (which may succeed if your DHCP server takes a long time to respond) or to configure the network manually. Some DHCP servers require a DHCP hostname to be sent by the client, so you can also choose to retry DHCP network autoconfiguration with a hostname that you provide.

Network configuration method:

Retry network autoconfiguration

Retry network autoconfiguration with a DHCP hostname

Configure network manually

Do not configure the network at this time

Screenshot

Go Back

Continue



Configure the network

The IP address is unique to your computer and may be:

- * four numbers separated by periods (IPv4);
- * blocks of hexadecimal characters separated by colons (IPv6).

You can also optionally append a CIDR netmask (such as /24).

If you don't know what to use here, consult your network administrator.

IP address:

Screenshot

Go Back

Continue



Configure the network

The name servers are used to look up host names on the network. Please enter the IP addresses (not host names) of up to 3 name servers, separated by spaces. Do not use commas. The first name server in the list will be the first to be queried. If you don't want to use any name server, just leave this field blank.

Name server addresses:

Screenshot

Go Back

Continue



Configure the network

The gateway is an IP address (four numbers separated by periods) that indicates the gateway router, also known as the default router. All traffic that goes outside your LAN (for instance, to the Internet) is sent through this router. In rare circumstances, you may have no router; in that case, you can leave this blank. If you don't know the proper answer to this question, consult your network administrator.

Gateway:

Screenshot

Go Back

Continue



debian

Configure the network

Please enter the hostname for this system.

The hostname is a single word that identifies your system to the network. If you don't know what your hostname should be, consult your network administrator. If you are setting up your own home network, you can make something up here.

Hostname:

asgard2

Screenshot

Go Back Continue



debian

Configure the network

The domain name is the part of your Internet address to the right of your host name. It is often something that ends in .com, .net, .edu, or .org. If you are setting up a home network, you can make something up, but make sure you use the same domain name on all your computers.

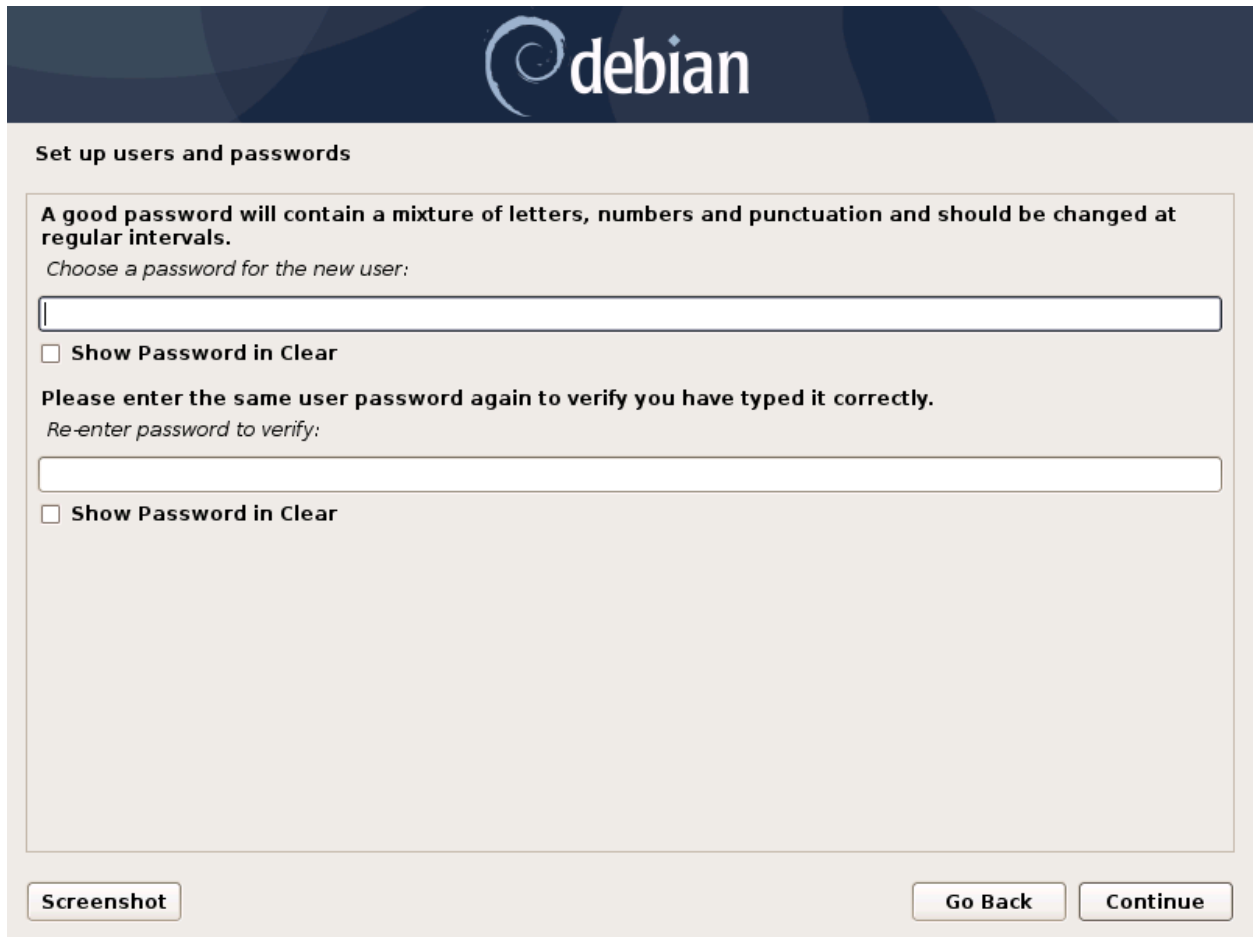
Domain name:

intranet.example.org

Screenshot

Go Back Continue

2.5 Choosing a Password



The image shows a Debian installer window titled "Set up users and passwords". At the top is the Debian logo. The main content area contains instructions: "A good password will contain a mixture of letters, numbers and punctuation and should be changed at regular intervals." followed by "Choose a password for the new user:". Below this is a text input field. Underneath the field is a checkbox labeled "Show Password in Clear". The next instruction is "Please enter the same user password again to verify you have typed it correctly." followed by "Re-enter password to verify:". Below this is another text input field, followed by a checkbox labeled "Show Password in Clear". At the bottom of the window, there are three buttons: "Screenshot" on the left, and "Go Back" and "Continue" on the right.

Fig. 1: Choosing a password for the nexttron user

2.6 Partitioning of the Hard Disk

Finally, write your configuration to the disk by selecting "Yes" and clicking "Continue".

If you are using a proxy to access the internet, enter the proxy details in the next step. Please note, **Internet connectivity is required** for the next step.



2.7 Proxy Configuration



The base installation is now complete. In the next step we will install the Broker Network Components. For this step **Internet connectivity is required**.

Use SSH to connect to the appliance using the user **nextron** and the password you specified during the installation. If SSH is not available, you can perform the next steps via the Console of your Virtualization Host, though SSH has more possibilities.

2.8 Changing the IP-Address

Your components IP Addresses can be changed in `/etc/network/interfaces`. The IP is configured with the address variable.

```
nexttron@asgard:~$ sudo vi /etc/network/interfaces
```

```
auto ens32
iface ens32 inet static
address 192.0.2.7
netmask 255.255.255.0
gateway 192.0.2.254
```

Note: There might be a case where the name of the network interface (in this example: `ens32`) is different. To verify this you can run `ip a` and see the name of the network interface.

The new IP can be applied with the command `sudo systemctl restart networking`.

Make sure to update the A-Records in your local DNS Server to reflect the IP changes.

2.8.1 Verifying DNS Settings

To verify if your components are using the correct DNS Server, you can inspect the file `/etc/resolv.conf`:

```
nexttron@asgard-ac:~$ cat /etc/resolv.conf
search example.org
nameserver 172.16.200.2
```

If you see errors in this configuration, you can change it with the following command:

```
nexttron@asgard-ac:~$ sudoedit /etc/resolv.conf
```

2.9 Installing the Broker Network Components

After the base installation of your servers is completed, we can install the specific software for the components.

You can now choose the role you want to install (Broker, Gatekeeper or Lobby):

You can install the three¹ servers in any order, as we will configure them once they are all up and running.

Warning: The Broker Network needs a minimum version of 2.14.0 of the ASGARD Management Center. Please make sure you installed your Broker Network license in your ASGARD Management Center. If you still can't see the Broker Network tab in your Asset Management, restart the `asgard2` service in Settings > System > Services.

¹ This number may vary. In this example we went with the minimum of one Broker, one Lobby and one Gatekeeper.

```
Execute one of the following commands to proceed with the installation:
Asgard:                sudo nextronInstaller -asgard
Master Asgard:         sudo nextronInstaller -masterasgard

Asgard Broker:         sudo nextronInstaller -broker
Asgard Gatekeeper:     sudo nextronInstaller -gatekeeper
Asgard Lobby:          sudo nextronInstaller -lobby

Analysis Cockpit:      sudo nextronInstaller -cockpit

Security Center:       sudo nextronInstaller -securitycenter
Security Center Model: sudo nextronInstaller -securitycentermodel
```

2.9.1 Gatekeeper Installation

To install the Gatekeeper, run the following command on your newly installed system:

```
nextron@gatekeeper:~$ sudo nextronInstaller -gatekeeper
```

```
Execute one of the following commands to proceed with the installation:
Asgard:                sudo nextronInstaller -asgard
Master Asgard:         sudo nextronInstaller -masterasgard

Asgard Broker:         sudo nextronInstaller -broker
Asgard Gatekeeper:     sudo nextronInstaller -gatekeeper
Asgard Lobby:          sudo nextronInstaller -lobby

Analysis Cockpit:      sudo nextronInstaller -cockpit

Security Center:       sudo nextronInstaller -securitycenter
Security Center Model: sudo nextronInstaller -securitycentermodel

nextron@asgard-broker:~$ sudo nextronInstaller -gatekeeper

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for nextron:
```

After the installation is done, you will see the following message:

You can now check if the service was installed successfully.

```
nextron@gatekeeper:~$ systemctl status asgard2-gatekeeper.service
```

```
Installation of Asgard Gatekeeper completed.

To connect the Gatekeeper to a running Asgard instance execute the command that can be generated in
the Broker Network settings on that Asgard

nexttron@asgard-broker:~$
```

You will see that the service is in a **"failed/exited"** state. This will change once we configured our ASGARD with the Gatekeeper.

To configure your Gatekeeper in the ASGARD Management Center, we will continue later in the chapter *Gatekeeper Configuration*.

2.9.2 Lobby Installation

To install the Lobby, run the following command on your newly installed system:

```
nexttron@lobby:~$ sudo nextronInstaller -lobby
```

```
Execute one of the following commands to proceed with the installation:
Asgard:                sudo nextronInstaller -asgard
Master Asgard:         sudo nextronInstaller -masterasgard

Asgard Broker:         sudo nextronInstaller -broker
Asgard Gatekeeper:     sudo nextronInstaller -gatekeeper
Asgard Lobby:          sudo nextronInstaller -lobby

Analysis Cockpit:      sudo nextronInstaller -cockpit

Security Center:       sudo nextronInstaller -securitycenter
Security Center Model: sudo nextronInstaller -securitycentermodel

nexttron@asgard-broker:~$ sudo nextronInstaller -lobby

We trust you have received the usual lecture from the local System
Administrator. It usually boils down to these three things:

    #1) Respect the privacy of others.
    #2) Think before you type.
    #3) With great power comes great responsibility.

[sudo] password for nexttron: _
```

After a short while you will be prompted to enter a password for the **admin** user. This is the user for the web interface of the Lobby.

Note:

The password has to be:

- A minimum of 12 characters long

- Contain at least one upper- and lowercase letter, one digit and one special character

```
Please set a password for the admin user on the WebUI of the lobby.

Password must be complex and comply to the following criteria
The password must be at least 12 characters long and
it must contain characters from the following categories:
upper case letters, lower case letters, numbers and special characters

Please enter password for lobby user `admin`:
```

After the installation is finished, you will see the following message:

```
Please set a password for the admin user on the WebUI of the lobby.

Password must be complex and comply to the following criteria
The password must be at least 12 characters long and
it must contain characters from the following categories:
upper case letters, lower case letters, numbers and special characters

Please enter password for lobby user `admin`:
Please re-enter password for lobby user `admin`:
2022/11/23 15:09:21 {"LEVEL":"INFO","MESSAGE":"Database initialized..","MODULE":"SET_PASSWORD"}
2022/11/23 15:09:21 {"LEVEL":"INFO","MESSAGE":"Password successfully updated","MODULE":"SET_PASSWORD"}
2022/11/23 15:09:21 Creating installer lock /var/lib/nextron/installer/done
2022/11/23 15:09:21 Installation of Asgard Lobby completed.

Use https://asgard-lobby.pi:9443 to connect to the web frontend
nextron@asgard-lobby:~$ _
```

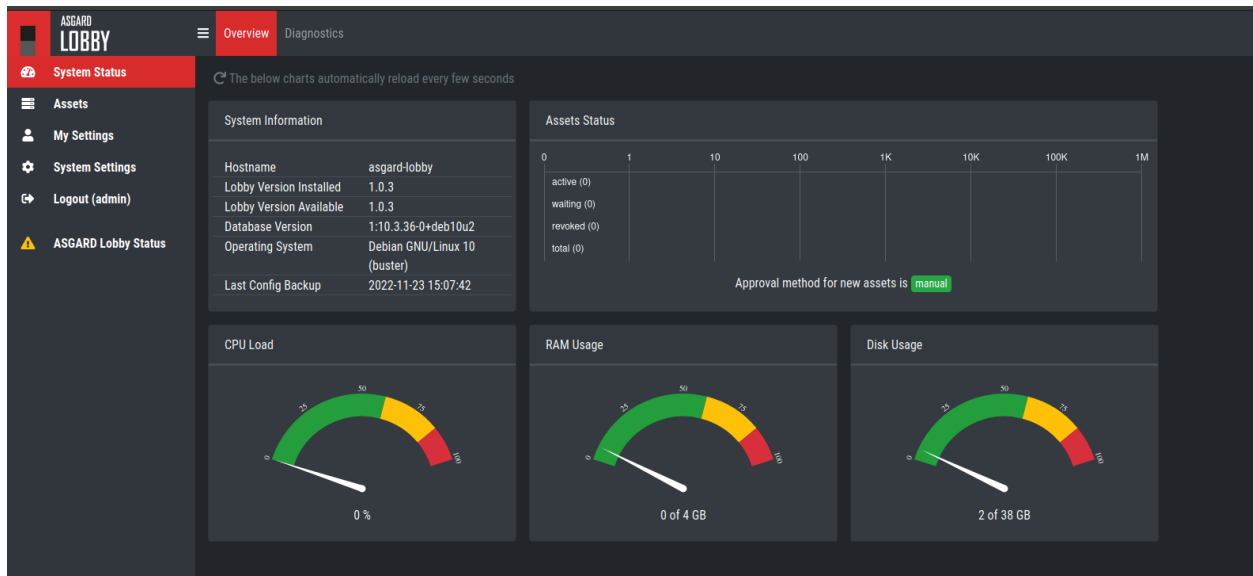
You can check the service to see if everything is up and running.

```
nextron@lobby:~$ systemctl status asgard-lobby.service
```

```
valid_etc forever preferred_etc forever
nextron@asgard-broker:~$ systemctl status asgard-lobby.service
● asgard-lobby.service - ASGARD Lobby
   Loaded: loaded (/lib/systemd/system/asgard-lobby.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2022-10-25 10:49:02 CEST; 3min 30s ago
     Main PID: 20760 (asgard-lobby)
        Tasks: 14 (limit: 4667)
       Memory: 19.9M
      CGroup: /system.slice/asgard-lobby.service
              └─20760 /usr/bin/asgard-lobby start-server --host :443 --admin-host :9443 --gatekeeper-ho
lines 1-8/8 (END)
```

You can now navigate to the web interface of the lobby <https://<FQDN>:9443>. Please log into the Lobby with the user `admin` and the password you chose during the installation:

To configure your Lobby in the ASGARD Management Center, we will continue later in the chapter *Lobby Configuration*.



2.9.3 Broker Installation

To install a Broker, run the following command on your newly installed system

```
nexttron@broker:~$ sudo nexttronInstaller -broker
```

After the installation is finished, you will see the following message:

You can now check if the service was installed successfully.

```
nexttron@broker:~$ systemctl status asgard-broker.service
```

You will see that the service is in a **"failed/exited"** state. This will change once we configured our ASGARD with the Broker.

To configure your Broker in the ASGARD Management Center, we will continue later in the chapter *Broker Configuration*.

Execute one of the following commands to proceed with the installation:

```
Asgard:          sudo nextronInstaller -asgard
Master Asgard:   sudo nextronInstaller -masterasgard

Asgard Broker:   sudo nextronInstaller -broker
Asgard Gatekeeper: sudo nextronInstaller -gatekeeper
Asgard Lobby:    sudo nextronInstaller -lobby

Analysis Cockpit: sudo nextronInstaller -cockpit

Security Center:  sudo nextronInstaller -securitycenter
Security Center Model: sudo nextronInstaller -securitycentermodel
```

```
nextron@asgard-broker:~$ sudo nextronInstaller -broker
```

We trust you have received the usual lecture from the local System Administrator. It usually boils down to these three things:

- #1) Respect the privacy of others.
- #2) Think before you type.
- #3) With great power comes great responsibility.

```
[sudo] password for nextron: _
```

Installation of Asgard Broker completed.

To connect the broker to a running Asgard instance execute the command that can be generated in the Broker Network settings on that Asgard

```
nextron@asgard-broker:~$ _
```

ADMINISTRATION

This chapter assumes you already installed at least one Lobby, one Gatekeeper and one Broker. If you did not do this yet, please get back to chapter *Overview of the Components* and follow the instructions carefully.

3.1 Configuration of the Components

This chapter assumes you already installed at least one Lobby, one Gatekeeper and one Broker. If you did not do this yet, please get back to chapter *Overview of the Components* and follow the instructions carefully.

3.1.1 Gatekeeper Configuration

Once you installed your Gatekeeper via the `nexttronInstaller` you can start to configure it.

To do this, we have to connect the Gatekeeper to our ASGARD Management Center. Navigate to **Asset Management > Broker Network** in your ASGARD Management Center.

From here you can click the edit button on the Gatekeeper:

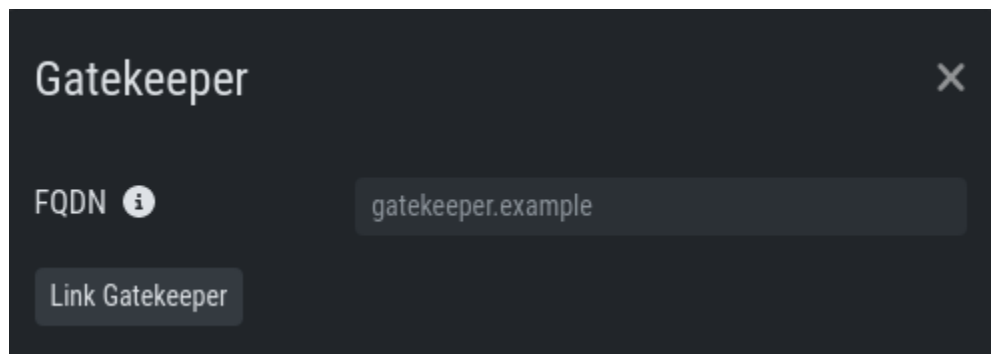
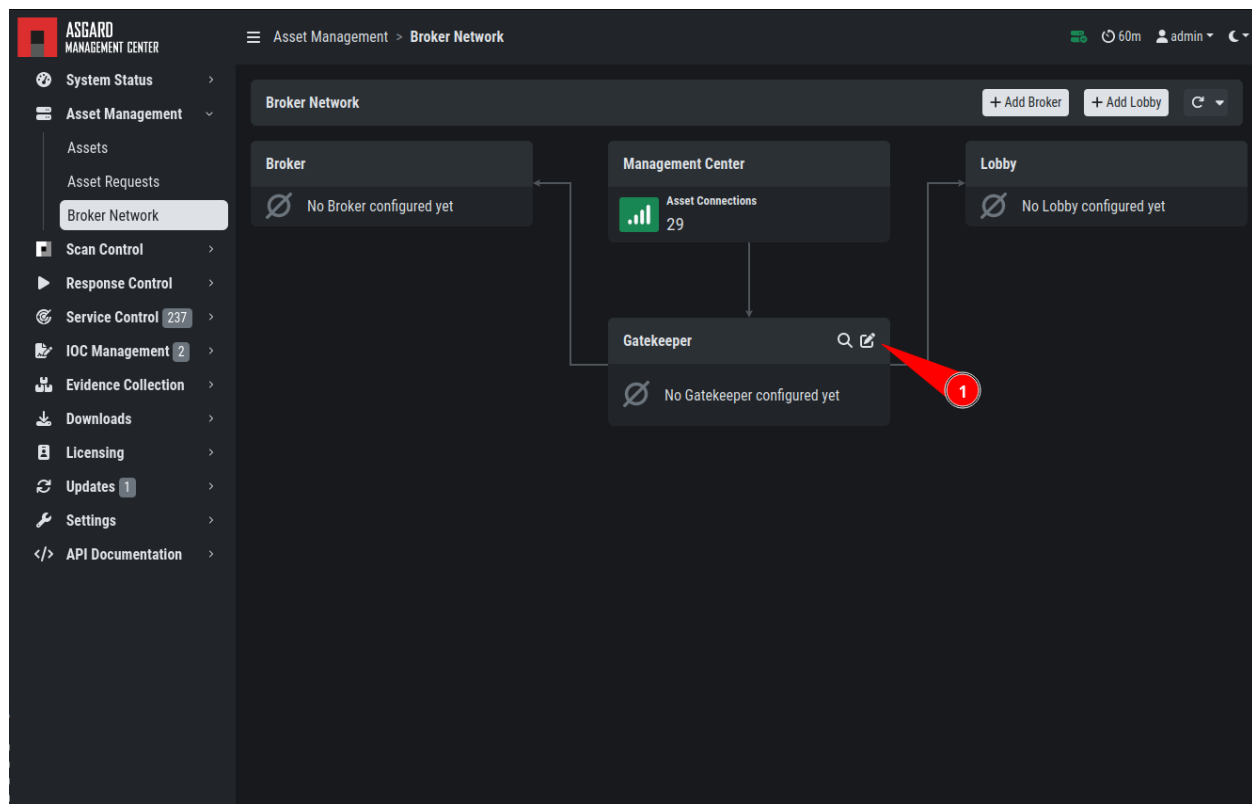
Once you clicked on the Edit Button, a pop-up will appear. Please set the FQDN of your gatekeeper.

After you confirmed your Gatekeeper's FQDN, you will get another pop-up with a command (`sudo asgard2-gatekeeper-install '<TOKEN>'`). Please copy this command and execute it on the gatekeeper via SSH:

Once you are done, you can check the status and other settings of the Gatekeeper in your ASGARD (magnifying glass icon):

To see if the Gatekeeper is running correctly, you can run the following command (status should be active (running)):

```
nexttron@broker:~$ systemctl status asgard2-gatekeeper.service
asgard2-gatekeeper.service - ASGARD 2 Gatekeeper
  Loaded: loaded (/lib/systemd/system/asgard2-gatekeeper.service; enabled; vendor_
  ↳ preset: enabled)
  Active: active (running) since Fri 2022-11-04 08:40:15 CET; 17s ago
Main PID: 1826 (bash)
  Tasks: 7 (limit: 4667)
  Memory: 13.3M
  CGroup: /system.slice/asgard2-gatekeeper.service
          └─1826 /bin/bash /etc/asgard2-gatekeeper/run_asgard2_gatekeeper.sh
             └─1827 /usr/bin/asgard2-gatekeeper
```



Install Gatekeeper Instructions

If the Gatekeeper is not yet linked with the Management Center, run the following command **on the Gatekeeper** to link it with the Management Center.

```
sudo asgard2-gatekeeper-install
```

Copy To Clipboard

Note: The instructions to link the Gatekeeper with the Management Center can always be reviewed in the [Q details view](#)

```
nexttron@gatekeeper:~$ sudo asgard2-gatekeeper-install
successfully installed config from ASGARD
nexttron@gatekeeper:~$
```

Gatekeeper gatekeeper.loc...

Details
Link with ASGARD
Gatekeeper Log
Rejected Headers
Rejected Requests
Settings

Host	gatekeeper.local
Installed Version	1.0.4
Available Version	2.0 (major upgrade - commandline only)

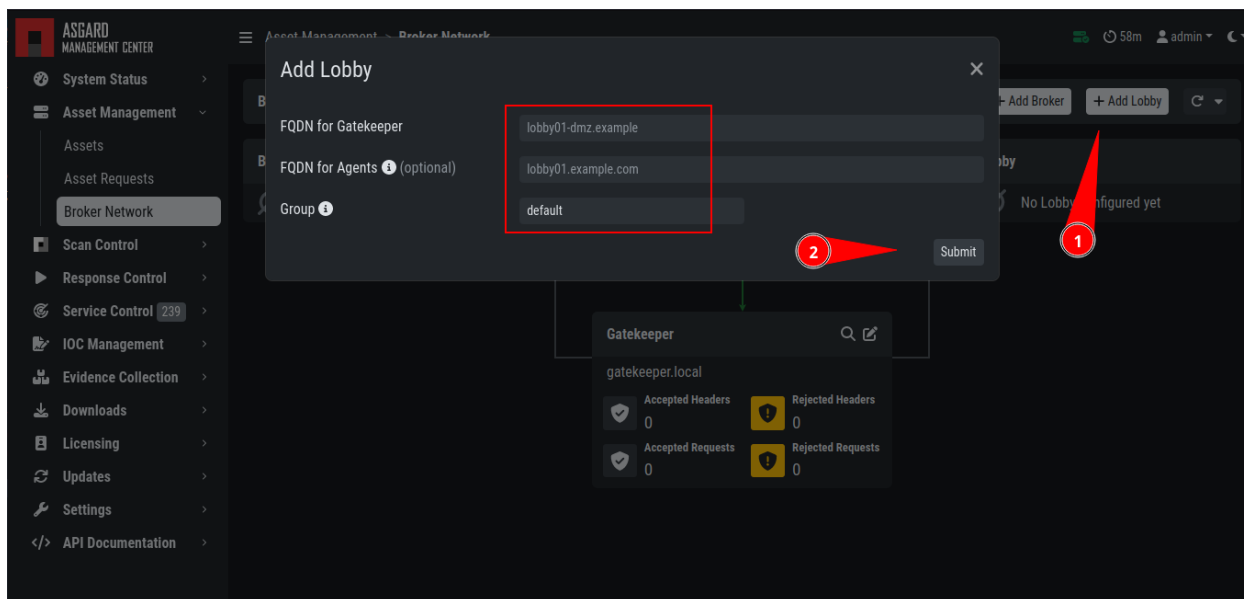
Restart Gatekeeper
Check for Updates

Note: You might need to restart the Gatekeeper after the initial setup. To do this, run `sudo systemctl restart asgard2-gatekeeper.service` on the CLI of your Gatekeeper.

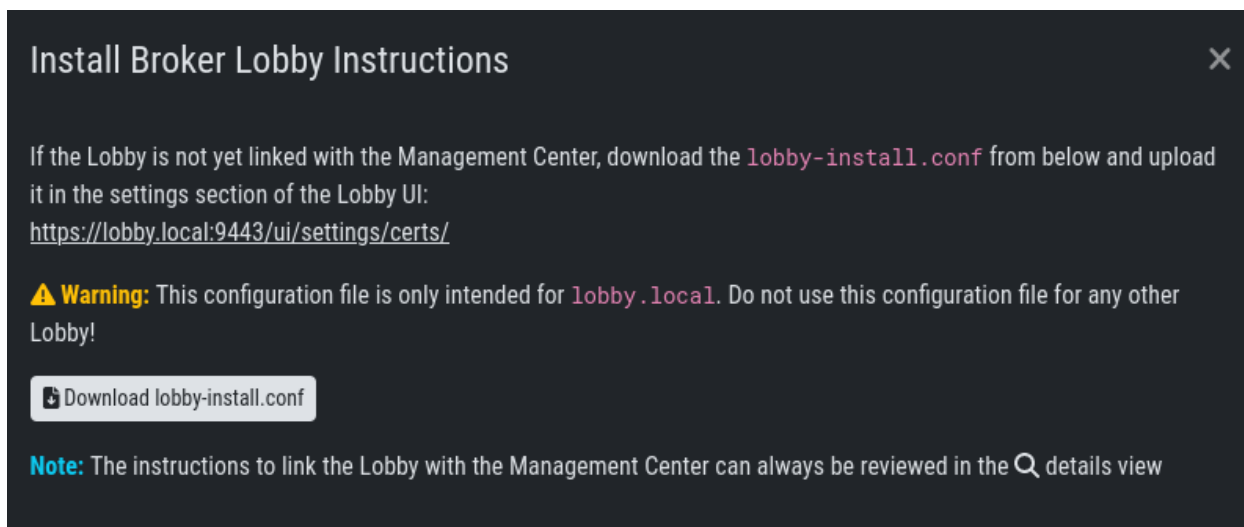
3.1.2 Lobby Configuration

Once you installed your Lobby via the `nextronInstaller` you can start to configure it.

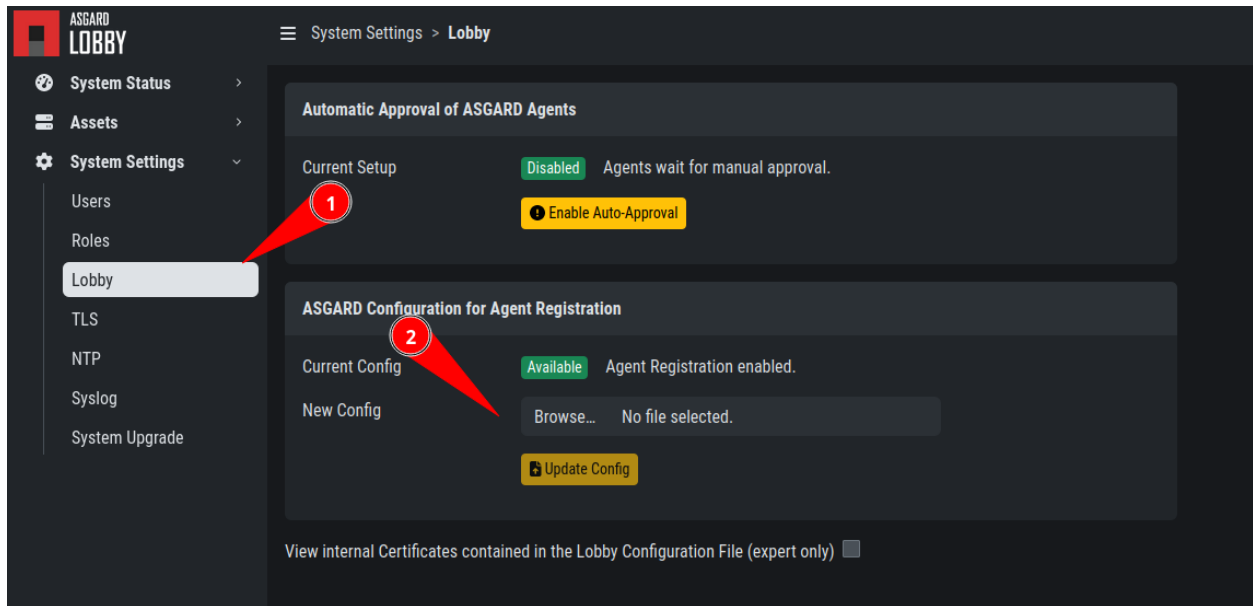
To do this, we have to connect the Lobby to our ASGARD Management Center. Navigate to **Asset Management > Broker Network** in your ASGARD Management Center. You can now add a new Lobby on the top right corner. Please fill in the FQDN and click **Submit**. You can assign a **Group** to group the Lobby and one or multiple Brokers into one group. If you are planning to only use one Lobby you can leave the value as `default`.



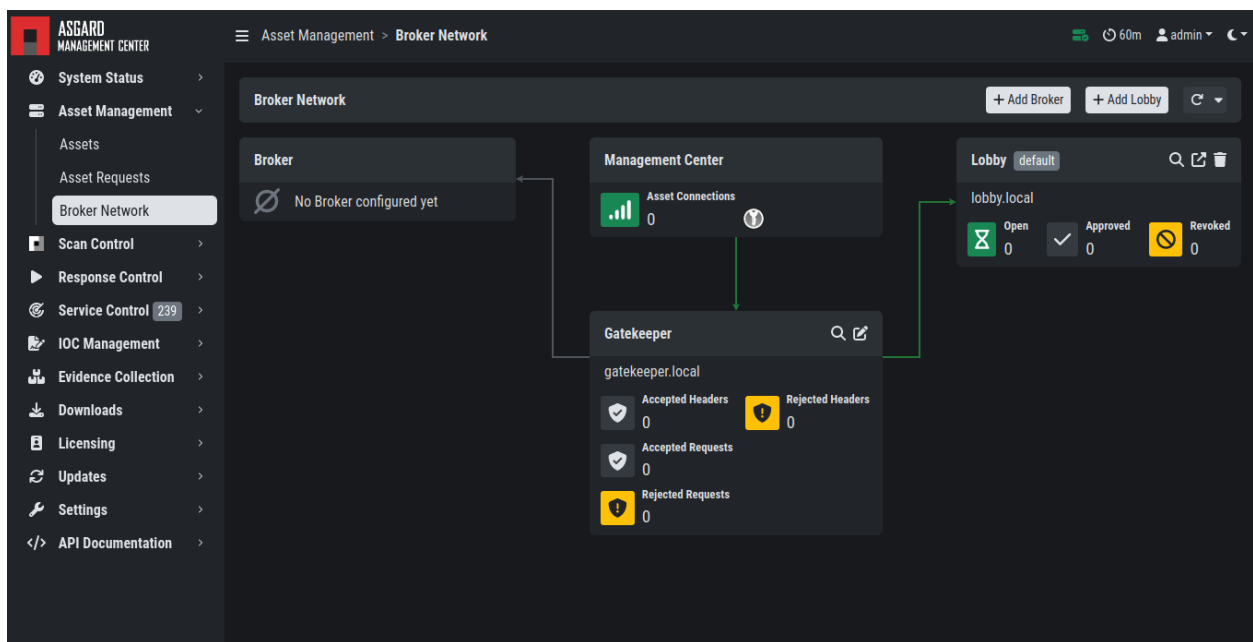
A pop-up will appear with configuration instructions. Download the configuration file, we will use this now in our Lobby.



In your Lobby, navigate to System Settings > Lobby. Here you can upload the configuration file we downloaded in the last step:



After you uploaded the configuration to your Lobby, you should now see that the Lobby is connected with your ASGARD Management Center (Broker Network view in your ASGARD):



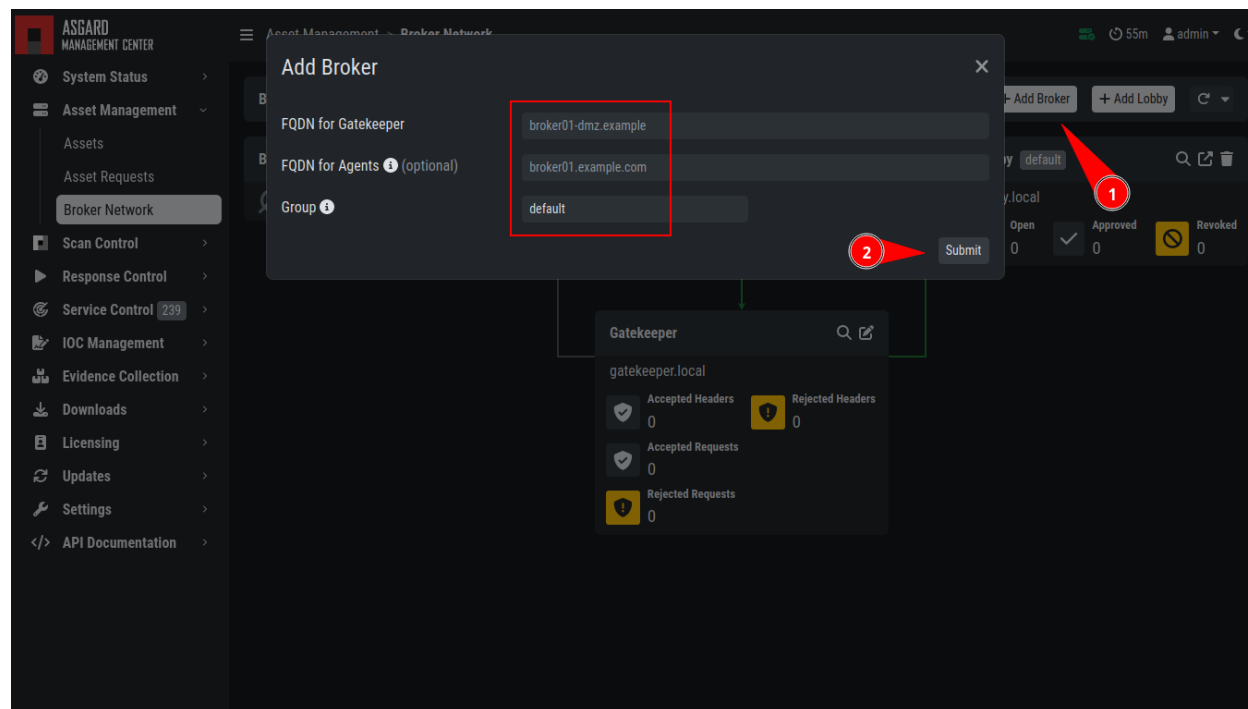
Note: You might need to restart the Lobby after the initial setup. To do this, run `sudo systemctl restart asgard-lobby.service` on the CLI of your Lobby.

3.1.3 Broker Configuration

Once you installed your Broker via the `nexttronInstaller` you can start to configure it.

To do this, we have to connect the Broker to our ASGARD Management Center. Navigate to **Asset Management > Broker Network** in your ASGARD Management Center.

On the top right corner, click **Add Broker**. Please fill in the **FQDN for Gatekeeper** - this is the FQDN which your Gatekeeper will use to communicate with this Broker. Additionally, if the Broker should be reached via the open internet, you should assign **FQDN for Agents** as well (make sure to set the A-Record in your public domain). If you leave the **FQDN for Agents** empty, your agents will use the value of **FQDN for Gatekeeper**. You can leave the **Group** as default, but should change it accordingly if you set a different group earlier for your Lobby.



After you confirmed the settings for your new Broker, you will get another pop-up with a command (`sudo asgard2-gatekeeper-install '<TOKEN>'`). Please copy this command and execute it on the broker via SSH:

Once you are done, you can check the status and other settings of the Broker in your ASGARD Management Center (magnifying glass icon):

In this menu of your Broker, you can also configure NTP or rsyslog.

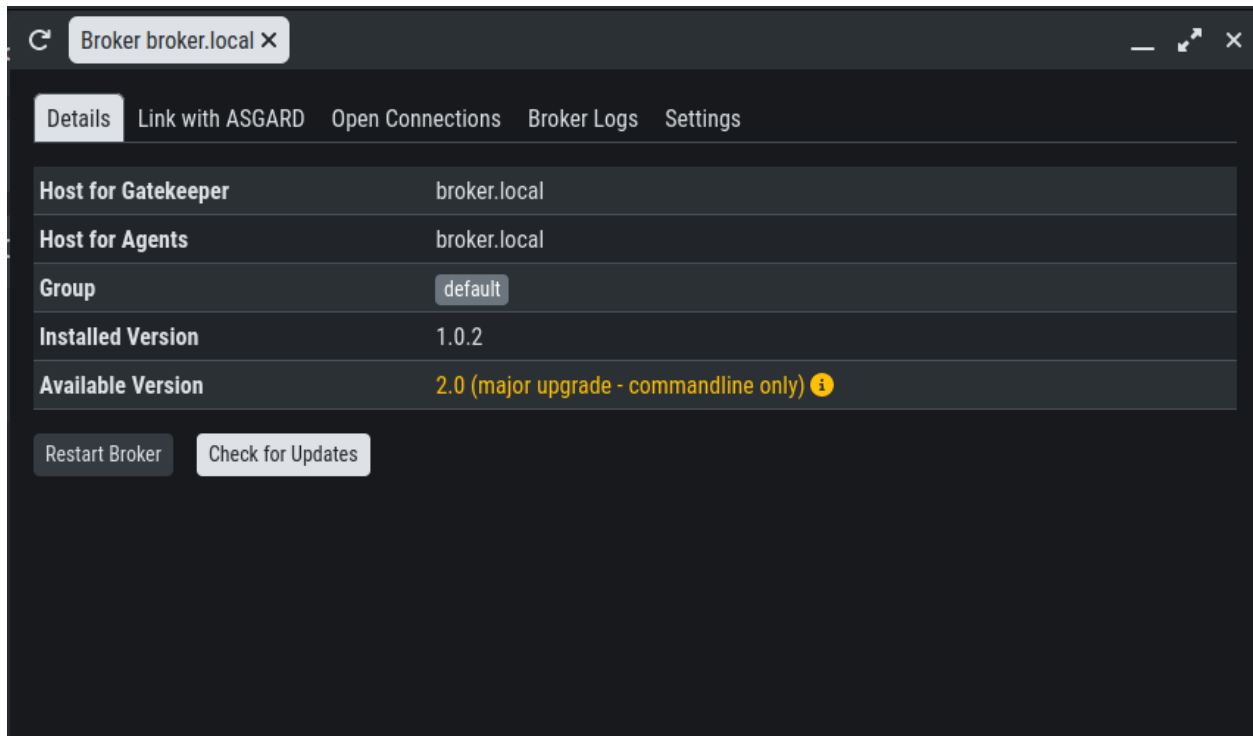
You might need to restart the Broker after the initial setup.

To see if the Broker is running correctly, you can run the following command (status should be active (running)):

```
nexttron@broker:~$ systemctl status asgard-broker.service
asgard-broker.service - ASGARD Broker
  Loaded: loaded (/lib/systemd/system/asgard-broker.service; enabled; vendor preset:
  →enabled)
  Active: active (running) since Fri 2022-10-28 09:55:50 CEST; 6 days ago
Main PID: 10235 (bash)
  Tasks: 19 (limit: 4698)
  Memory: 1.4G
```

(continues on next page)

3.1. Configuration of the Components	33
---	-----------



(continued from previous page)

```
CGroup: /system.slice/asgard-broker.service
├─10235 /bin/bash /etc/asgard-broker/run_asgard_broker.sh
└─10236 asgard-broker
```

3.2 Agent Installer

After the Broker Network has been set up, you need to create a new Agent Installer. To do this, navigate on your ASGARD to **Downloads > Agent Installers**. From here you can choose **Add Agent Installers** and set the configuration to your liking. Most importantly here is the Option for **Broker Groups**. Set this to the value which you gave your Lobby and your Broker(s). After you added the agent installer, make sure to install it on the agents.

3.3 Migrate existing Agents to Broker Network

If you need to update existing ASGARD Agents with your new configuration for the Broker Network, you can create a (Scheduled) Group Task.

To do this, navigate to **Response Control > (Scheduled) Group Task** and add a new task. Chose **Maintenance** for the Task and Configure the asset's **Broker Network** for the Maintenance Type.

The Broker Groups are optional, but you should choose accordingly if you created a different group in the earlier steps.

Once the Agents received the task from your ASGARD, the configuration will be updated. The Agent will register itself to your Lobby and ask for a certificate. This certificate is used to allow communication with the Broker.

Add Agent Installers

Note: If you do not use a unique affix ⓘ you might overwrite already existing installers.

Affix ⓘ (optional) (no default)
Only characters A-Z, a-z, 0-9 and '-' are allowed. If set, length has to be between 3 and 15

Obfuscation Name ⓘ (optional) (default: asgard2-agent)
Only characters A-Z, a-z, 0-9 and '-' are allowed. If set, length has to be between 3 and 15

Operating System Linux (.deb)

Architecture amd64

Labels ⓘ (optional) Enter value (1st value)

Proxy (optional) Enter value (1st value)

System Proxy ⓘ (optional) ☐

Syslog to ASGARD ⓘ (optional) ☐

Broker Groups ⓘ (optional) default ✕

Add Agent Installers

ASGARD MANAGEMENT CENTER

Downloads > Agent Installers

Repack Outdated Agent Installers Add Agent Installers Delete

1 - 11 of 11 Show 25 1

Name	OS	Size	Modified	Asset Labels	Proxy	Broker Groups	Actions
asgard2-agent-linux-386.deb	Linux (.deb)	6 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-linux-386.rpm	Linux (.rpm)	8 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-linux-amd64.deb	Linux (.deb)	6 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-linux-amd64.rpm	Linux (.rpm)	8 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-linux-x86_64.rpm	Linux (.rpm)	8 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-macos-amd64.pkg	MacOS	9 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-macos-arm64.pkg	MacOS	8 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-windows-386.exe	Windows	8 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-agent-windows-amd64.exe	Windows	9 MB	2024-02-21			default	⌵ ⬇ ⌵
asgard2-service-controller-windows-386.exe	Windows	8 MB	2024-02-20			default	⌵ ⬇ ⌵
asgard2-service-controller-windows-amd64.exe	Windows	9 MB	2024-02-20			default	⌵ ⬇ ⌵

Add Scheduled Group Task

Description (optional)

First Run

2022-11-04 09:00:00

Repeat Interval

7 days

Task Target ⓘ (optional)

(no labels selected)

Advanced

Limit ⓘ

100

Rate

1 per minute

Expires ⓘ

in 7 days

Task

Maintenance

Max. Runtime ⓘ

4 days

Maintenance Type

Configure the asset's Broker Network

Broker Groups ⓘ (optional)

default ✕

Broker Network

Broker
Lobby

Add Scheduled Group Task

3.4 Using the Lobby

The Lobby is the component in your Broker Network which needs a little more attention. The Lobby is distributing or revoking certificates for ASGARD Agents, which are needed to communicate over the secure channel of the Broker Network. The first thing your Agents, if configured to use your Broker Network, will do, is to contact your Lobby. They need a unique certificate to be able to communicate with your Brokers.

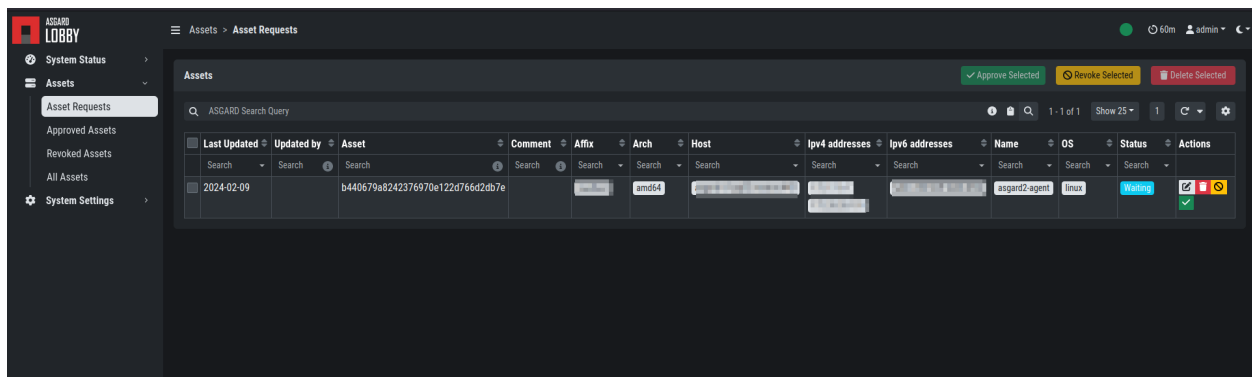
During the initial setup of your Agent, a unique public and private key will be generated. The agent sends the public key to the Lobby, which in return (if the Asset is being accepted) sends the agent a signed TLS ClientAuth certificate.

The Gatekeeper is pulling the current CA certificate from the Lobby, as well as the CRL and sends it to all the Brokers. The Brokers need this CA certificate to verify the authenticity of the presented certificate (similar to TLS in Web traffic).

The agent will use the earlier issued certificate from the Lobby to communicate with the Broker. If the certificate is valid (i.e. it was signed by the root CA in the Lobby), it is allowed to continue further. If the certificate of the agent has been revoked (now in the CRL) or was not signed by the CA, communication is denied.

3.4.1 Asset Requests

In your Lobby you can see the Asset Request of your Agents in **Assets > Asset Requests**:



Here you have four options depending on what should happen to this agent:

- Issue Certificate to allow connections from an asset
- Revoke Certificate to deny connections from an asset
- Delete Asset from Database; the asset may re-register
- Edit Asset

You can set your Lobby to auto-accept new agents, see [Lobby Settings](#).

3.4.2 Approved Assets

In your Lobby you can see all the approved assets in **Assets > Approved Assets**.

Here you can see more information about the issued certificates or revoke some certificates to deny connection from the assets.

Actions you can take:

- Revoke Certificate to deny connections from an asset
- Edit Asset

Last Updated	Updated by	Asset	Comment	Affix	Arch	Host	IPv4 addresses	IPv6 addresses	Name	OS	Status	Actions
2024-02-07	Master Chief	42e45877ca454582b7ef04ea75082d64							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	a4a5441619fa1ec8c1e6209d09b6e1e0							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	24c8b65b7635896113f4a2675c4ea0d7							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	40b0baf051d7f4e80fe552ae6b5e7bd							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	e1554f9ca4068ab1f2fe9e26e047115e							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	a172673ce468a90e890e1cf84b10b2c5							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	61c97e7ab14f20e39595c009117ffa90							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	ea7fa99a4ed5a3446aaaaaf85a56079							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	ea73773be4c23b0b85431ce216d0a0b5							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	600a747a61209ec5207d589899b7cdc2							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	39cb838550a6e7f31b3747be17c7103c							asgard2-agent	linux	Approved	[Edit] [Refresh]
2024-02-07	Master Chief	8b0378ecf2eeb942ff770a0325624df							asgard2-agent	linux	Approved	[Edit] [Refresh]

Once a certificate is revoked, the Agent communication is denied. The certificate will be placed in the CRL, which in return gets distributed by the Gatekeeper to all the Brokers.

Revoke Asset

This will revoke the certificate. The asset will no longer be able to connect.

42e45877ca454582b7ef04ea7	affix		arch	amd64	host		ipv4_addresses	
			ipv6_addresses		name	asgard2-agent	os	linux

Cancel
Confirm

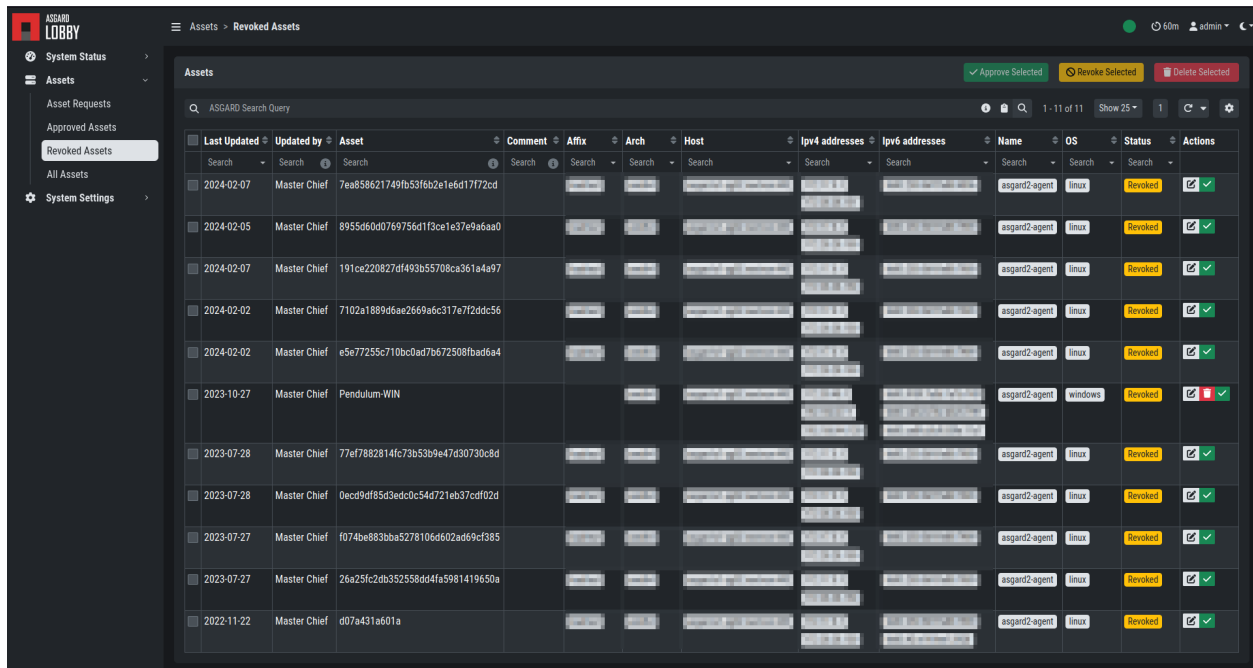
3.4.3 Revoked Assets

In your Lobby you can see all the revoked assets in Assets > Revoked Assets.

Actions you can take here:

- Issue Certificate to allow connections from an asset
- Edit Asset

If you want to allow a revoked asset to communicate with the Brokers again, you can do this here. The certificate belonging to the asset will be removed from the CRL, which in return gets distributed by the Gatekeeper to all the Brokers.



Last Updated	Updated by	Asset	Comment	Affix	Arch	Host	Ipv4 addresses	Ipv6 addresses	Name	OS	Status	Actions
2024-02-07	Master Chief	7ea858621749fb53f6b2e1e6d1772cd							asgard2-agent	linux	Revoked	✓
2024-02-05	Master Chief	8955d6d0769756d1f3ce1e37e9a6aa0							asgard2-agent	linux	Revoked	✓
2024-02-07	Master Chief	191ce220827df493b55708ca361a4e97							asgard2-agent	linux	Revoked	✓
2024-02-02	Master Chief	7102a1889d6ae2669a6c317e7f2ddc56							asgard2-agent	linux	Revoked	✓
2024-02-02	Master Chief	e5e77255c710bc0ad7b672508fba6a4							asgard2-agent	linux	Revoked	✓
2023-10-27	Master Chief	Pendulum-WIN							asgard2-agent	windows	Revoked	✓
2023-07-28	Master Chief	77ef7882814fc73b53b9e47d30730c8d							asgard2-agent	linux	Revoked	✓
2023-07-28	Master Chief	0ecd9df85d3edc0c54d721eb37cdf02d							asgard2-agent	linux	Revoked	✓
2023-07-27	Master Chief	f074be883bba5278106d602ad69cf385							asgard2-agent	linux	Revoked	✓
2023-07-27	Master Chief	26a25fc2db352558dd4fa5981419650a							asgard2-agent	linux	Revoked	✓
2022-11-22	Master Chief	d07a431a601a							asgard2-agent	linux	Revoked	✓

From this point on, the Agent can communicate with the ASGARD through the Broker again. Revoking and Allowing certificates will reflect to the Brokers rather quickly.

3.5 Lobby Settings

The Settings in your Lobby allow you to configure and tweak certain settings:

- Users
- Roles
- Lobby
- TLS
- NTP
- Syslog
- System Upgrade

3.5.1 Lobby Settings - Users

In the Users setting of the Lobby you can create new users or assign roles to existing users.

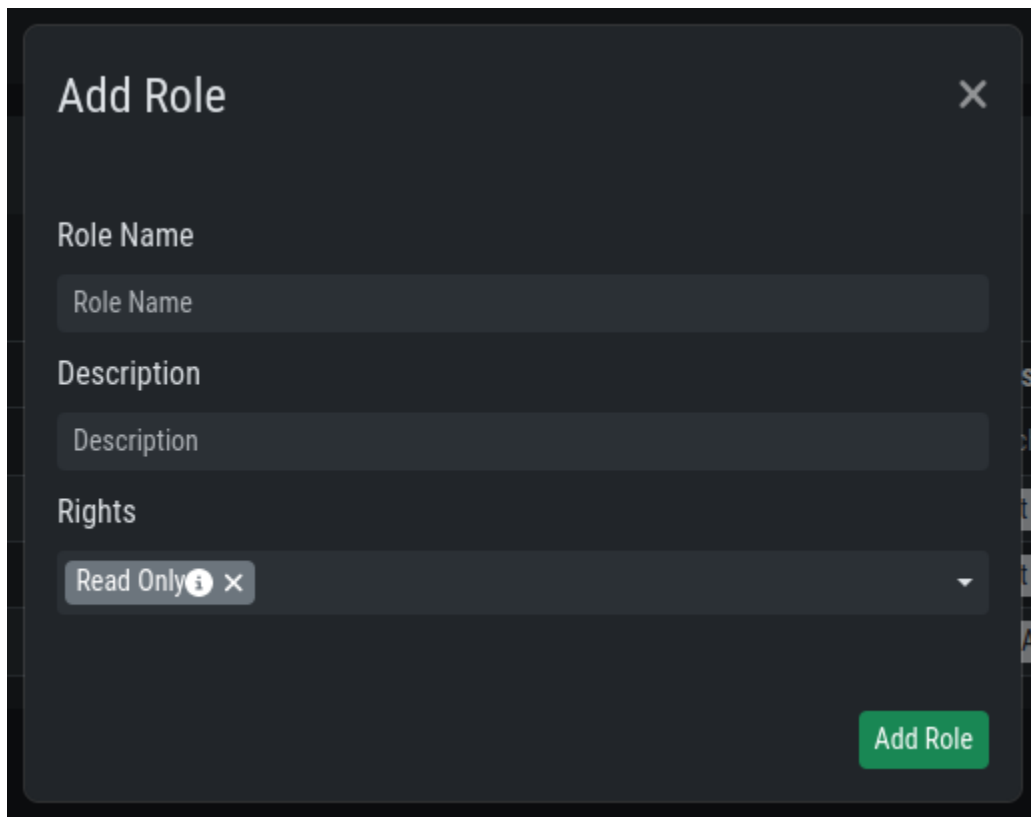
You can also enforce the usage of 2FA for certain users.

3.5.2 Lobby Settings - Roles

You can define different roles for your Lobby. The default roles are:

- User Admin
- Asset Manager
- Admin

An Additional Role of Read-Only can be created.



The screenshot shows a modal window titled "Add Role". It contains the following fields:

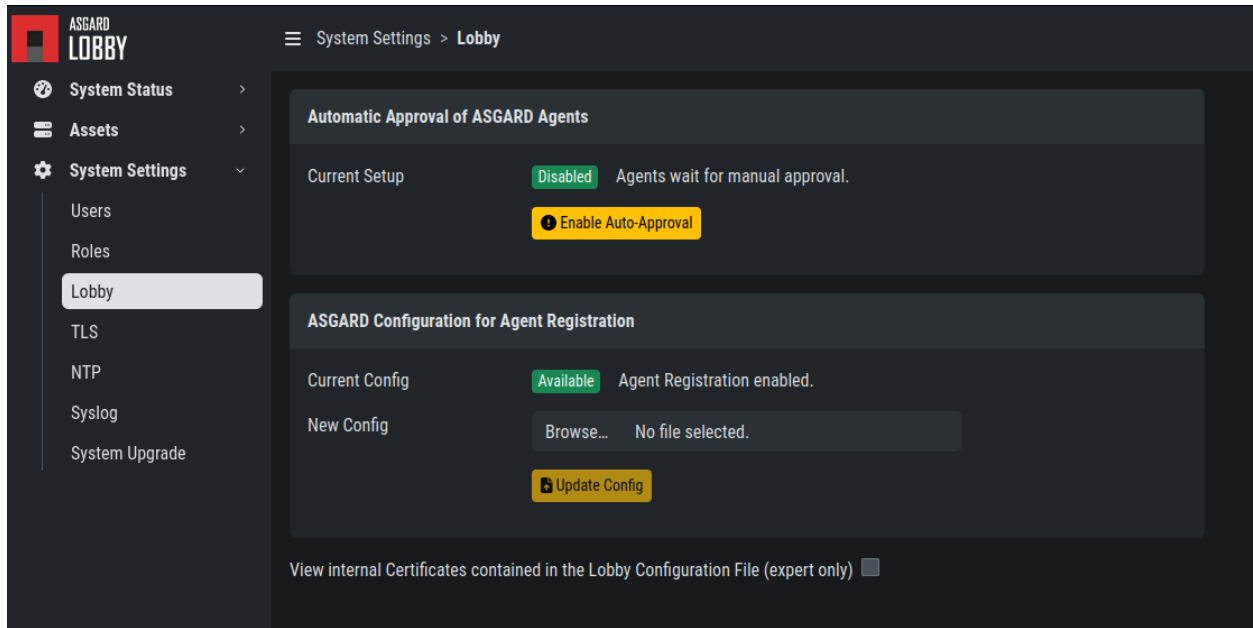
- Role Name:** A text input field with the placeholder text "Role Name".
- Description:** A text input field with the placeholder text "Description".
- Rights:** A dropdown menu with the selected option "Read Only". The dropdown also includes an information icon (i) and a close icon (x).

A green button labeled "Add Role" is located at the bottom right of the modal.

3.5.3 Lobby Settings - Lobby

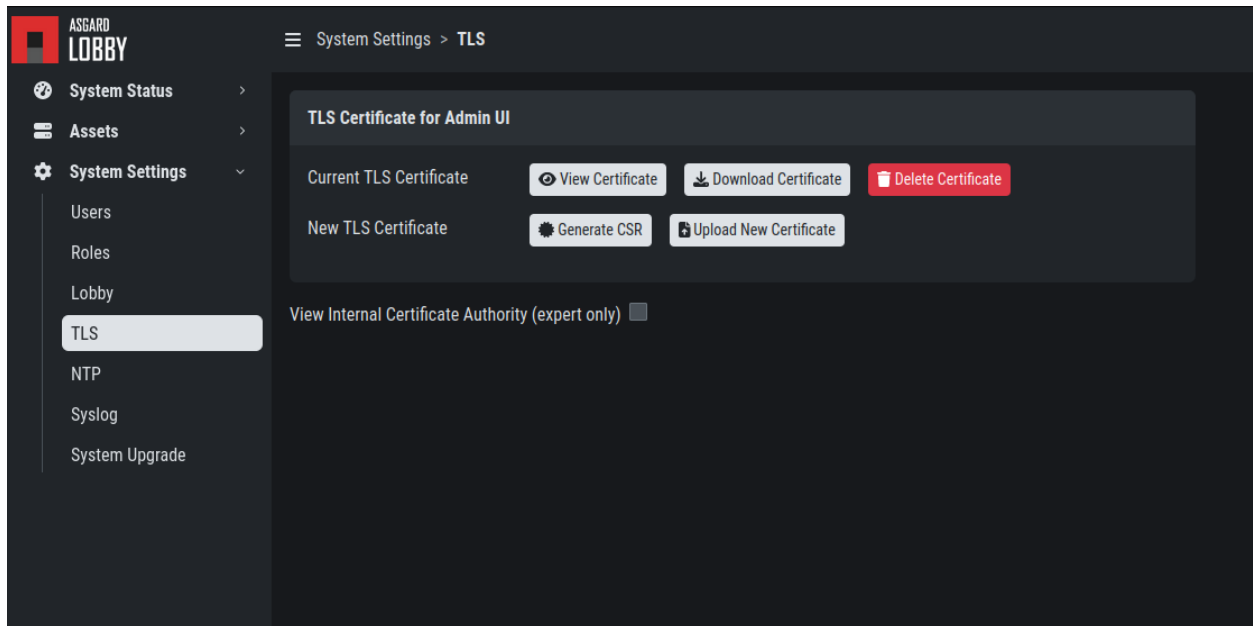
In the Lobby Settings, you can see if Current Config is Available, which in return allows Agent Registration. This does not need to be changed, only during the initial setup you need to import the configuration.

Additionally, you can enable the Automatic Approval of ASGARD Agents



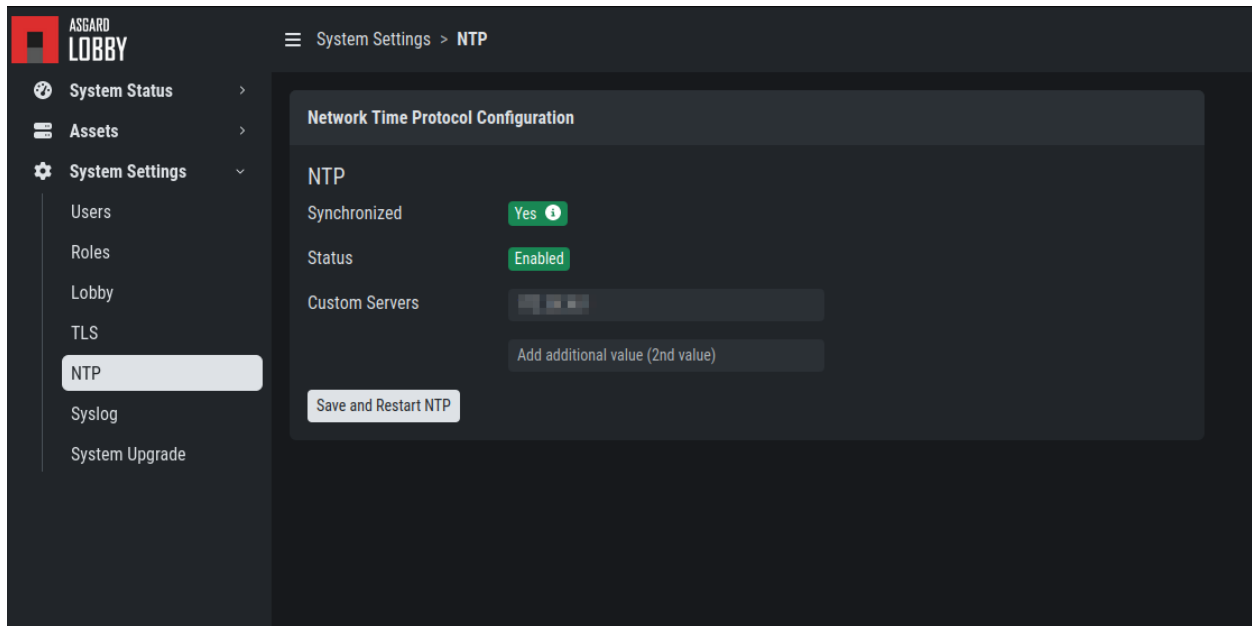
3.5.4 Lobby Settings - TLS

You can upload a TLS Certificate for the Web Interface of the Lobby.



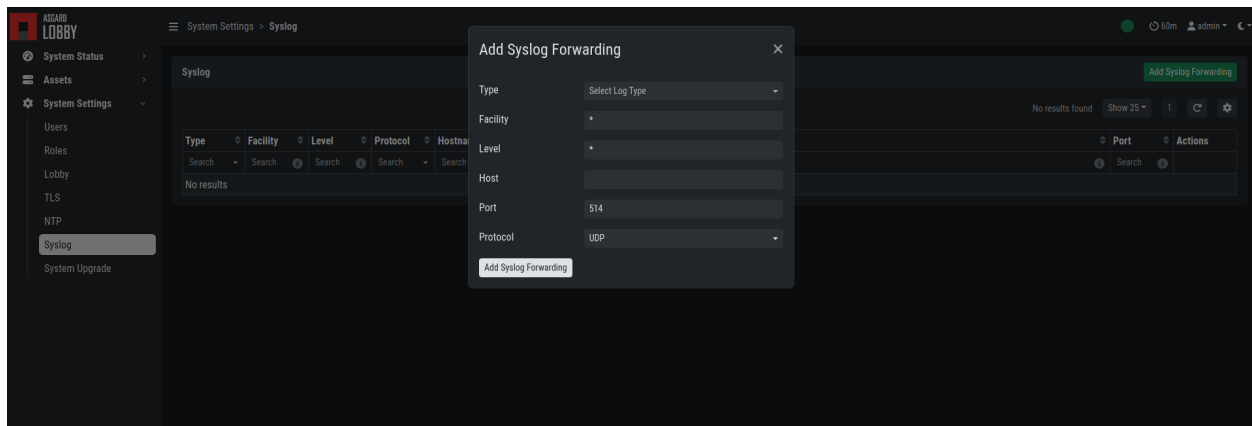
3.5.5 Lobby Settings - NTP

You can change the NTP Settings of the Lobby here. An indicator is shown with additional details regarding the NTP Status.



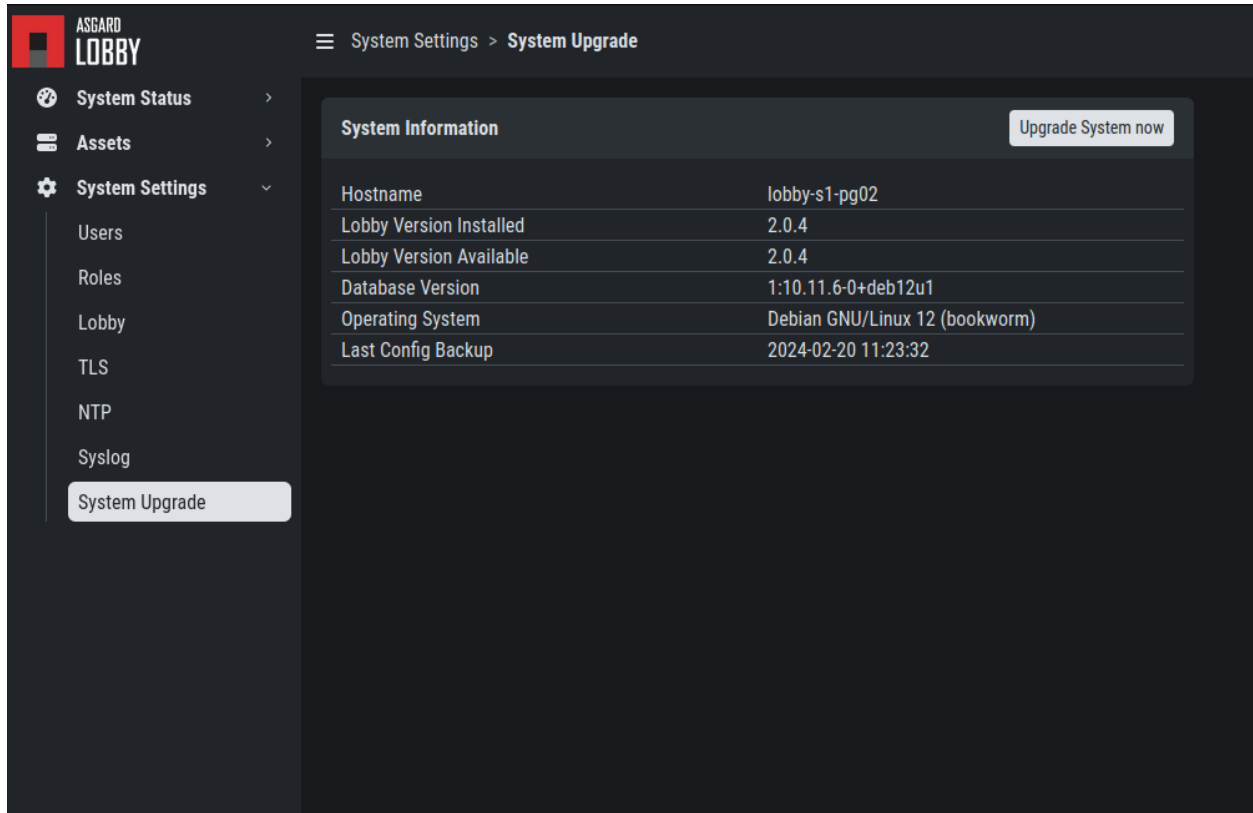
3.5.6 Lobby Settings - Syslog

You can configure Syslog Forwarding here, similar to the settings in your ASGARD, but only for your Lobby Logs.



3.5.7 Lobby Settings - Upgrade

Here you can apply system upgrades for the lobby. Additional information regarding the system are shown as well. You can also see and download the upgrade log if necessary.

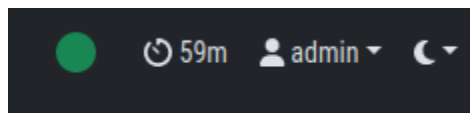


3.6 Lobby Status

The Lobby Status on the left hand side of the navigation menu gives a good indicator if there are any issues with the system.

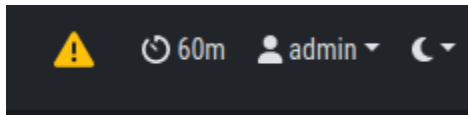
3.6.1 Lobby Status - OK

The green indicator means that everything is working as expected.



3.6.2 Lobby Status - Warning

A yellow indicator means that one or more services are not running properly.



Inspect the Diagnostics panel by clicking on the ASGARD Lobby Status button to get a better understanding of the issue.

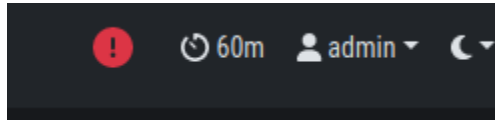
Diagnostics ×				
🔄 The below table automatically reloads every few seconds				
Status	Last Checked	Name	Description	Actions
✓	a few seconds ago	ASGARD Lobby Service	Checks status of the ASGARD Lobby Service	🔍 🔄
✓	a minute ago	ASGARD Lobby Updates	Checks for available updates of the ASGARD Lobby	🔍 🔄
⚠️	a minute ago	Connection from Gatekeeper	Checks the age of the last connection from the gatekeeper to the ASGARD Lobby	🔍 🔄
✓	a few seconds ago	Database Backup	Checks the age of the daily configuration database backup of the ASGARD Lobby	🔍 🔄
✓	a few seconds ago	Disk Usage	Checks the available disk space on the ASGARD Lobby	🔍 🔄
✓	a few seconds ago	MariaDB Service	Checks status of MariaDB Service	🔍 🔄
✓	a minute ago	MariaDB Updates	Checks for available updates of MariaDB Server	🔍 🔄
✓	a few seconds ago	Rsyslog Service	Checks status of Rsyslog Service	🔍 🔄
✓	a few seconds ago	Time Synchronisation	Checks whether system time is synchronized	🔍 🔄
✓	2 minutes ago	Update Server 301	update-301.nexttron-systems.com via https	🔍 🔄

Here we can see that the Gatekeeper didn't contact the Lobby. You can see more details by clicking the magnifying glass to the right.

Diagnostic Details ×	
Status	⚠️
Checked	a few seconds ago
Check Interval	every 60s
Check Duration	0ms
Name	Connection from Gatekeeper
Description	Checks the age of the last connection from the gatekeeper to the ASGARD Lobby
Reason	no connection from gatekeeper in the last minute
Guidance	Check that the ASGARD Lobby is correctly registered with its Gatekeeper, and ensure there is connectivity between the two.
Details	Last connection from gatekeeper at 2024-02-21 10:02:33 +0100 CET, which is 2m49s ago.

3.6.3 Lobby Status - Error

A red indicator means that one or more services are problematic and need to be fixed in a timely manner.



Inspect the Diagnostics panel by clicking on the ASGARD Lobby Status button to get a better understanding of the issue.

Diagnostics
×

🔄 The below table automatically reloads every few seconds

Status	Last Checked	Name	Description	Actions
✓	a minute ago	ASGARD Lobby Service	Checks status of the ASGARD Lobby Service	🔍 🔄
✓	a few seconds ago	ASGARD Lobby Updates	Checks for available updates of the ASGARD Lobby	🔍 🔄
✓	a minute ago	Connection from Gatekeeper	Checks the age of the last connection from the gatekeeper to the ASGARD Lobby	🔍 🔄
✓	a minute ago	Database Backup	Checks the age of the daily configuration database backup of the ASGARD Lobby	🔍 🔄
✓	a minute ago	Disk Usage	Checks the available disk space on the ASGARD Lobby	🔍 🔄
✓	a minute ago	MariaDB Service	Checks status of MariaDB Service	🔍 🔄
✓	a few seconds ago	MariaDB Updates	Checks for available updates of MariaDB Server	🔍 🔄
✓	a minute ago	Rsyslog Service	Checks status of Rsyslog Service	🔍 🔄
✓	a minute ago	Time Synchronisation	Checks whether system time is synchronized	🔍 🔄
❗	a few seconds ago	Update Server 301	update-301.nexttron-systems.com via https	🔍 🔄

Here we can see that the Lobby can't reach the update server. You can see more details by clicking the magnifying glass to the right.

3.7 Broker Network in the ASGARD Management Center

The Broker Network view in your ASGARD gives you:

- The number of Asset connections
- Gatekeeper Statistics
- Open, Approved and Revoked Asset Requests in your Lobby
- Indicator of connection issues between your components

Additionally, you can configure some settings of your Brokers, Gatekeeper and Lobby.

Diagnostic Details

Status

Checked

Check Interval

Check Duration

Name

Description

Reason

Guidance

Details

Status	<div></div>
Checked	a minute ago
Check Interval	every 300s
Check Duration	1ms
Name	Update Server 301
Description	update-301.nexttron-systems.com via https
Reason	HTTPS request failed: Get "https://update-301.nexttron-systems.com": tls: failed to verify certificate: x509: certificate is valid for lobby.local, lobby.local, not update-301.nexttron-systems.com
Guidance	validate that the ASGARD Lobby can communicate to https://update-301.nexttron-systems.com (TCP :443)
Details	<div>> GET / HTTP/1.1 Host: update-301.nexttron-systems.com <</div>

ASGARD
MANAGEMENT CENTER

System Status

Asset Management

Assets

Asset Requests

Broker Network

Scan Control

Response Control

Service Control 239

IOC Management

Evidence Collection

Downloads

Licensing

Updates

Settings

API Documentation

Asset Management > Broker Network

+ Add Broker

+ Add Lobby

5s

Broker default

broker.local

Asset Connections

0

Management Center

Asset Connections

0

Lobby default

lobby.local

Open

0

Approved

0

Revoked

0

Gatekeeper

gatekeeper.local

Accepted Headers

0

Rejected Headers

0

Accepted Requests

0

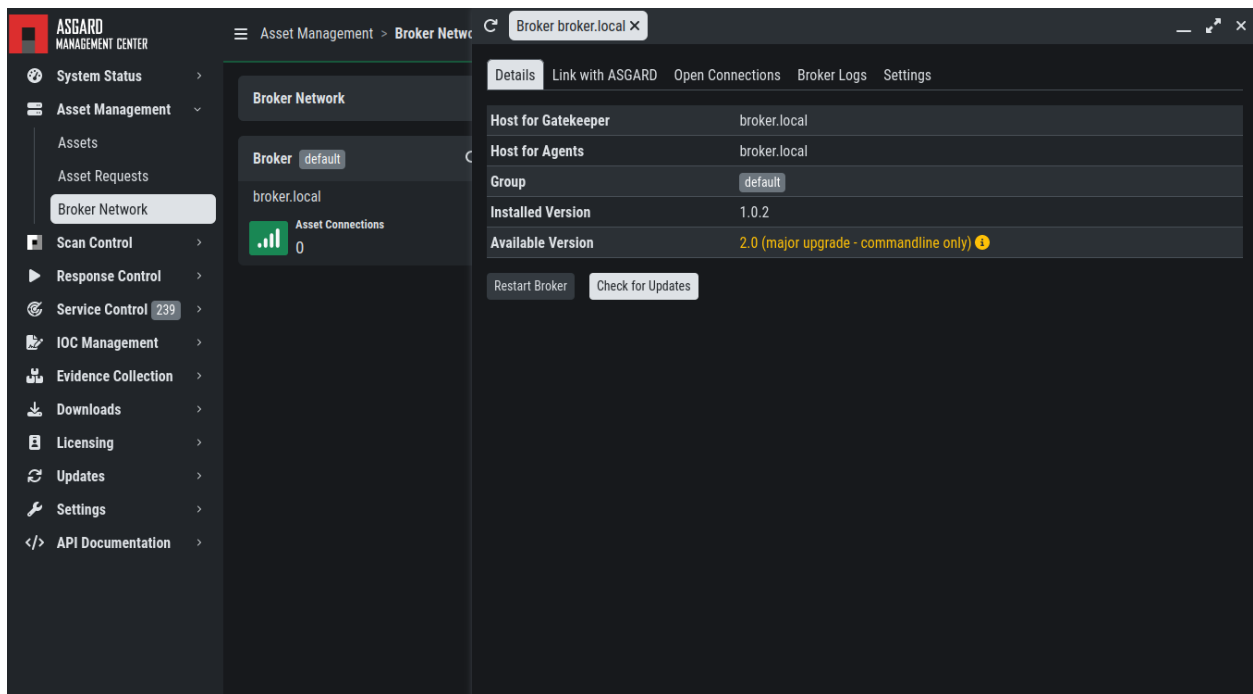
Rejected Requests

0

3.7.1 Broker Maintenance

In your Broker Network view, you can configure and inspect the status of your Brokers:

- Restart Broker
- Check for updates
- Statistics regarding Open Connections
- Broker Logs
- Settings
 - Configure syslog
 - Configure NTP

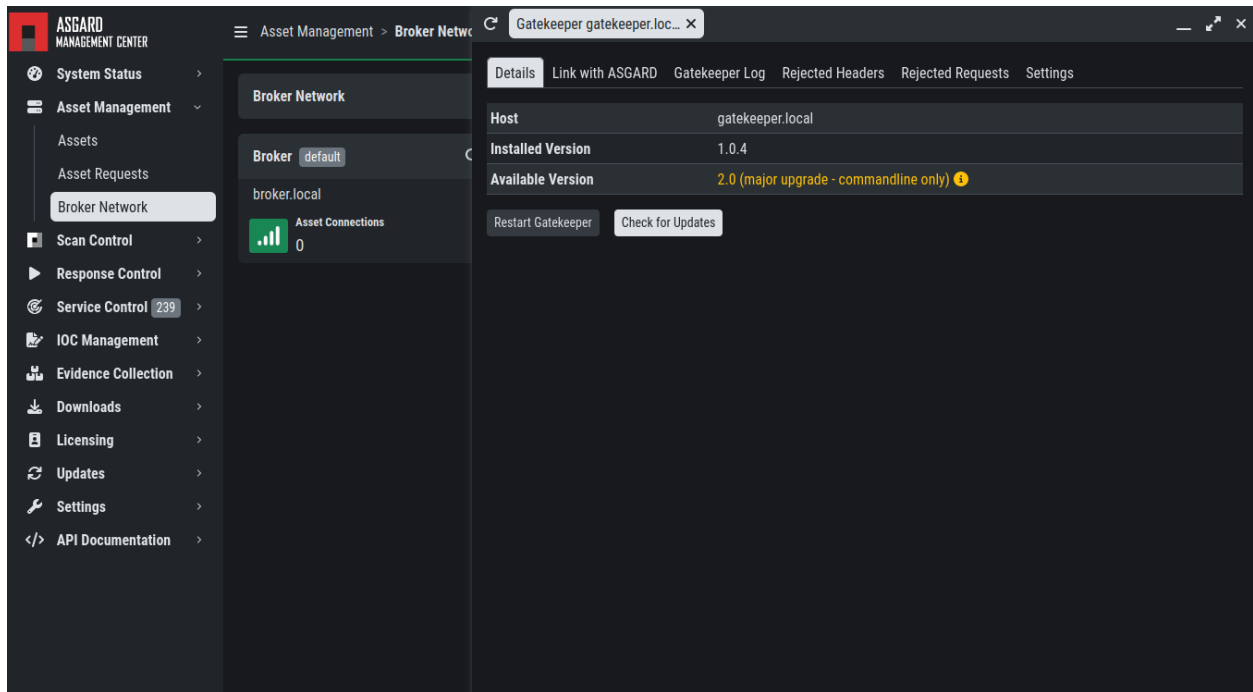


3.7.2 Gatekeeper Maintenance

In your Broker Network view, you can configure and inspect the status of your Gatekeeper:

- Restart Broker
- Check for updates
- Statistics regarding Open Connections
- Gatekeeper Log
- Rejected Headers
- Rejected Requests
- Settings
 - Configure syslog

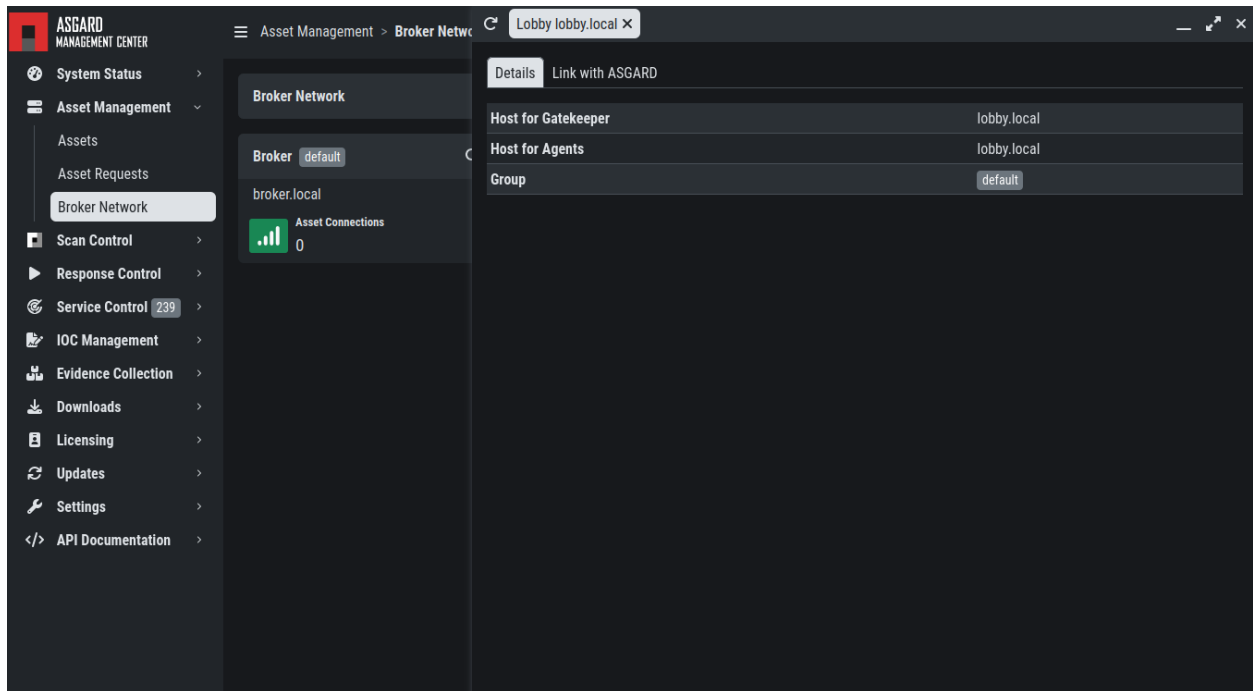
– Configure NTP



3.7.3 Lobby Maintenance

In your Broker Network view, you can inspect the details of your Lobby:

For configuration and Maintenance, use the Web Interface of the Lobby running on port 9443, see chapter *Using the Lobby*.



UPDATES

This section focuses on updates for your products.

Warning: The section *Major Updates* should only be considered if you have updated your ASGARD Management Center to version 3.x

Please see the manual section *Upgrade from Management Center v2 to v3* in the ASGARD Management Center Manual for the instructions to update your Management Center to the newest major version.

4.1 Minor Updates

This chapter guides you through the update process of your ASGARD Broker Network components.

4.1.1 ASGARD Broker

You can see new available versions for your Broker(s) if you open the details page for each Broker. To do this, navigate to **Asset Management > Broker Network** and click the magnifying glass icon next to your Broker:

Click the **Update from X to Y** Button. A popup will appear. Please read the information carefully and proceed with the Update.

The update process might take a few seconds, and you will get some warnings in your **Broker Network** overview, mainly that the connection to the broker is disrupted. This is normal and should correct itself after the service is up and running again.

4.1.2 ASGARD Gatekeeper

You can see new available versions for your Gatekeeper if you open the details page. To do this, navigate to **Asset Management > Broker Network** and click the magnifying glass icon next to your Gatekeeper:

Click the **Update from X to Y** Button. A popup will appear. Please read the information carefully and proceed with the Update.

The update process might take a few seconds, and you will get some warnings in your **Broker Network** overview, mainly that the connection to the broker is disrupted. This is normal and should correct itself after the service is up and running again.

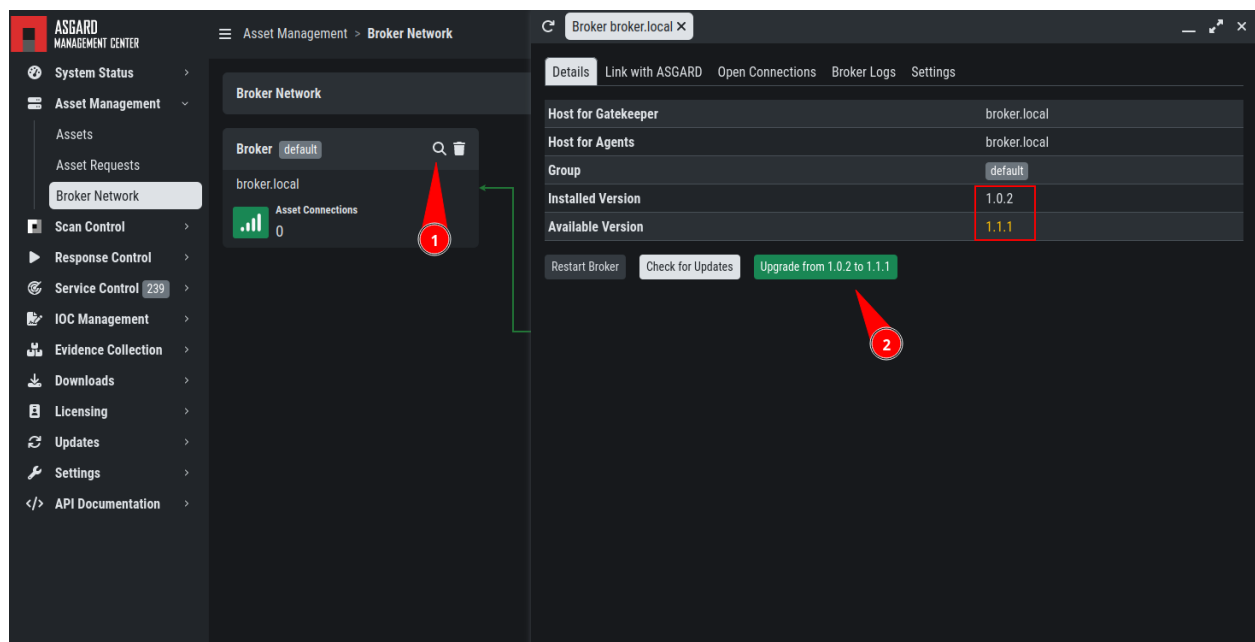


Fig. 1: Broker Minor Update

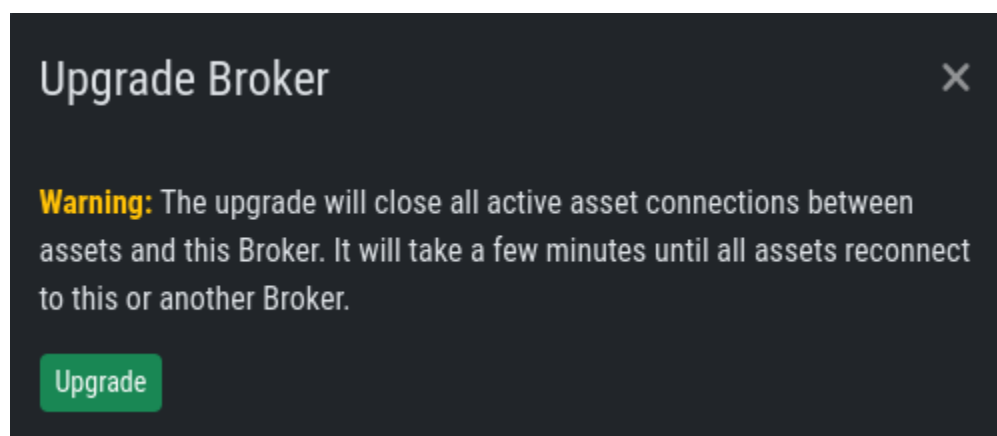


Fig. 2: Broker Minor Update Confirmation

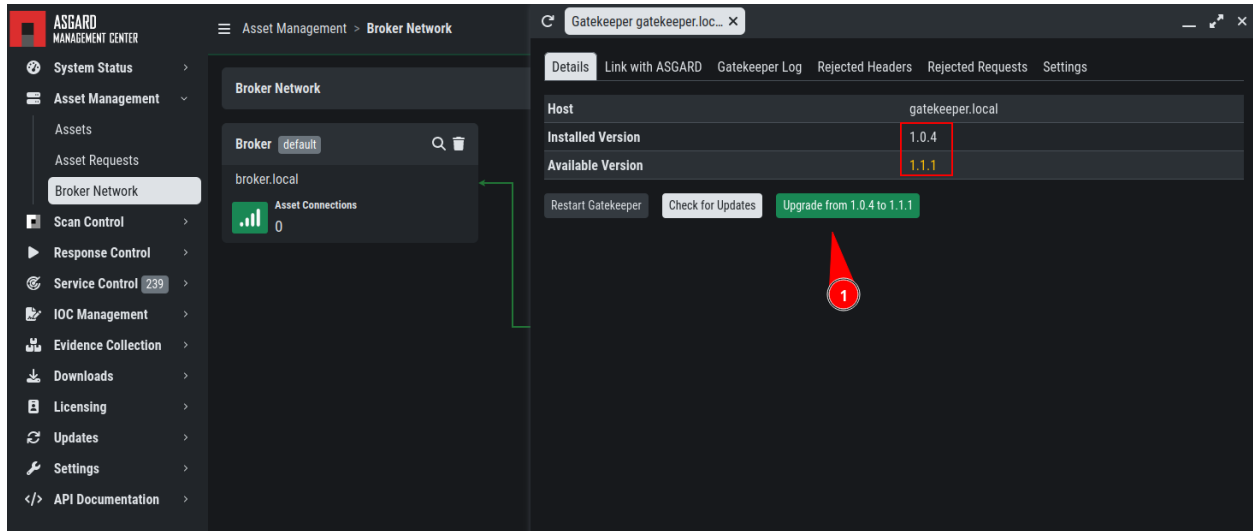


Fig. 3: Gatekeeper Minor Update

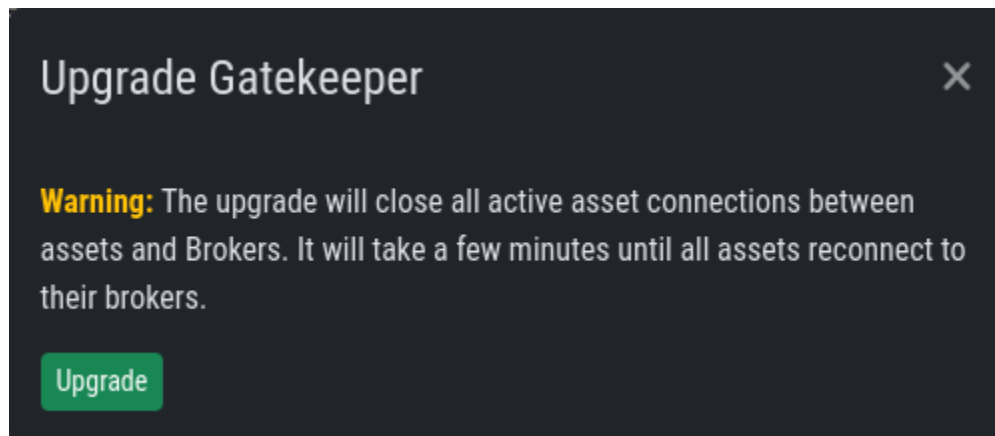


Fig. 4: Gatekeeper Minor Update Confirmation

4.1.3 ASGARD Lobby

To see if new updates for your Lobby are available, open the webinterface via your **Broker Network** view.

To do this, navigate to **Asset Management > Broker Network** and click the "open link" icon next to your Lobby:

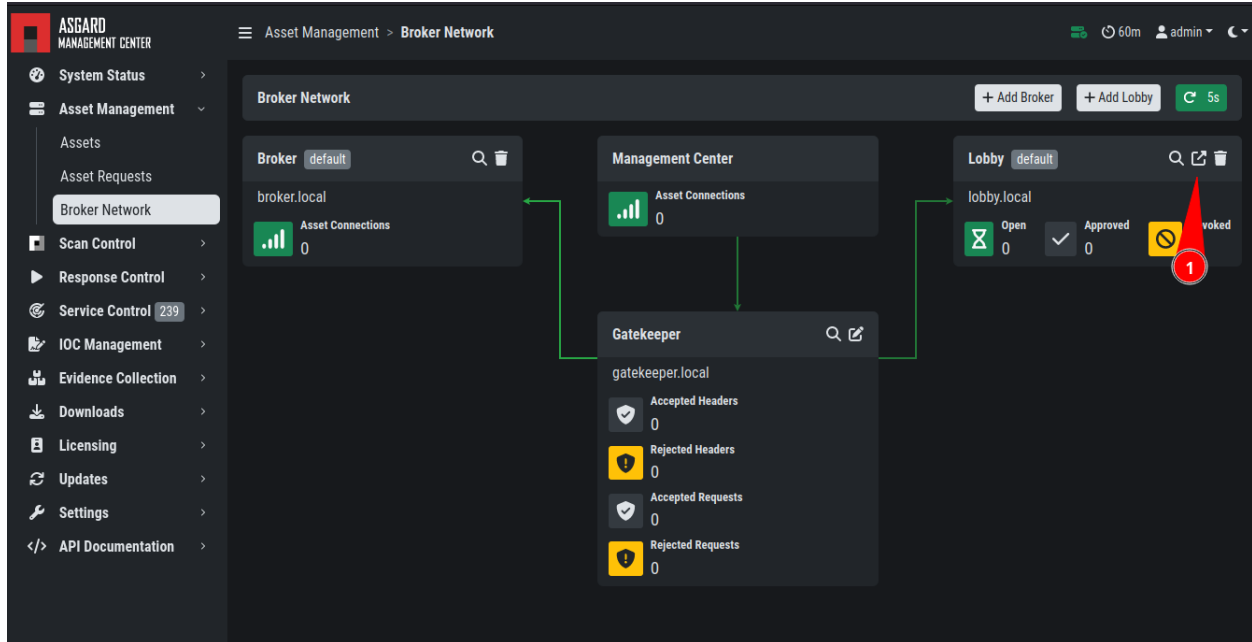


Fig. 5: Lobby Minor Update

A new browser tab with the URL to your Lobby will be opened. Log into the Lobby and navigate to **System Settings > System Upgrade**. You should see a new version available. You can also see available updates via the status indicator on the left navigation bar.

Click **Upgrade System** now to install the newest Lobby version. The Upgrade might take a while, and you will also see "Connectivity Issues" in your **Broker Network** tab on the Management Center, but this will correct itself once the Lobby has been updated successfully.

4.2 Major Updates

This chapter guides you through the update process of your ASGARD Broker Network components.

It is important to follow the steps carefully. We advise you to create a snapshot of the Gatekeeper and Lobby before starting your update. The Lobby and Gatekeeper contain certificates for your agents to connect through the broker endpoints. If those certificates get lost (i.e. the update fails and you need to reinstall), you need to re-connect all your agents again.

Note: You can start the update process on all your components simultaneously. The updates take a while and your components will be offline for the duration of the update.

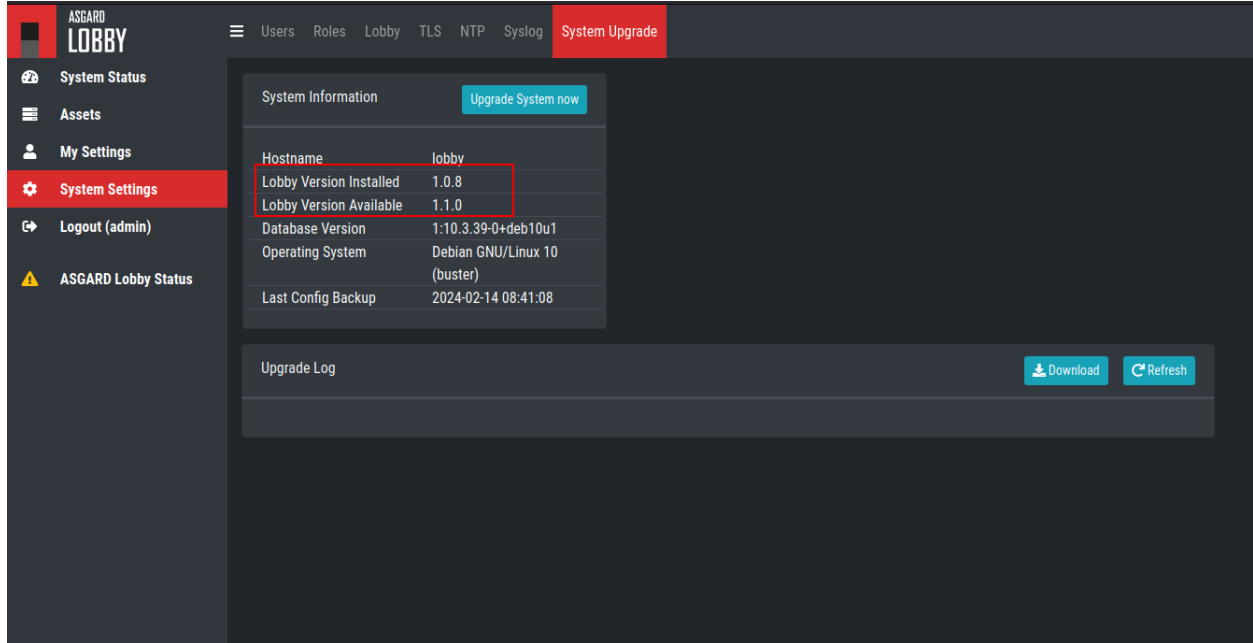


Fig. 6: Lobby Minor Update

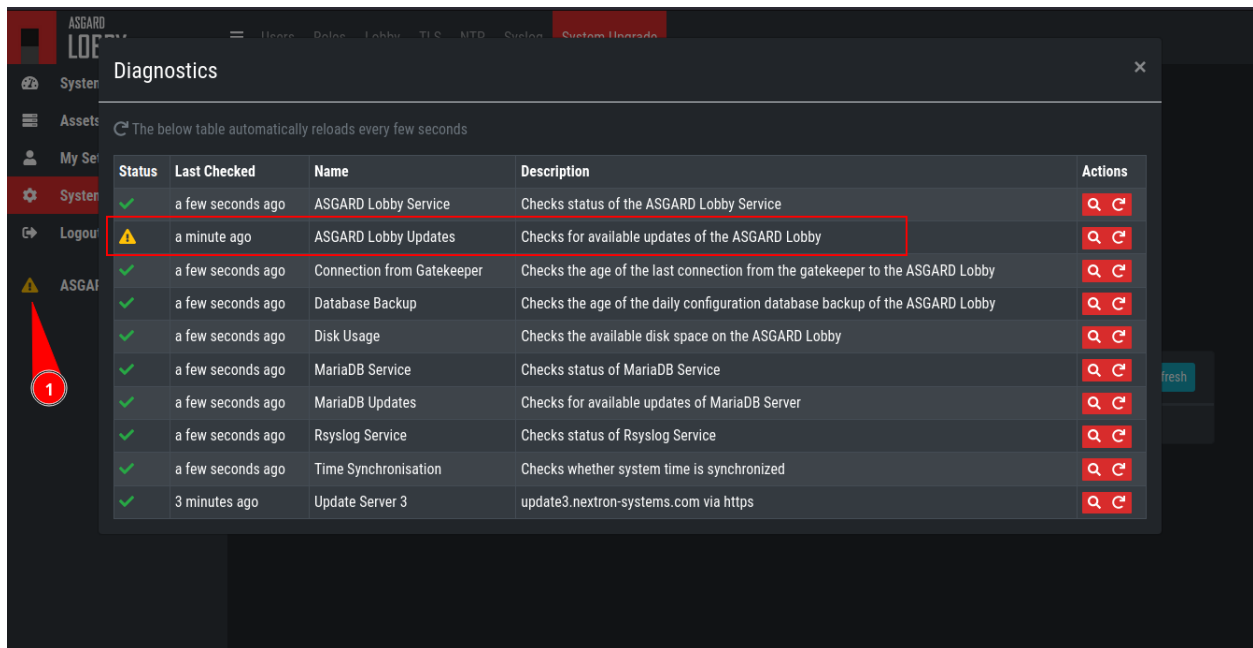


Fig. 7: Lobby Minor Update

4.2.1 Preparation

To prepare for your update, we compiled a list of tasks you should follow:

Task	Description
Snapshot of your Gatekeeper	For disaster recovery
Snapshot of your Lobby	For disaster recovery
Management Center running version 3.x	Prerequisite for the Updates
Connection to our new update servers	New update server infrastructure

For details regarding some of the above tasks, see the next section in this manual.

With the new version of your Broker Network, we also made changes to our update servers. Please make sure that all your components can reach the following servers:

Server	Port	Description
update3.nextron-systems.com	tcp/443	Old update server
update-301.nextron-systems.com	tcp/443	New update Server

The old update server is needed to fetch the updater and other prerequisites. The new update server is needed to update your servers to Debian 12 and also to install any new packages, which are needed for your Broker Network components.

You can find the corresponding IP-Addresses to the above FQDNs here: <https://www.nextron-systems.com/resources/hosts/>.

Management Center running version 3.x

To check if your Management Center is running on the correct version you can navigate to the Overview page. Here you can see the current version of your Management Center.

4.2.2 Performing the updates

In this section we will perform the actual update of the your components.

ASGARD Broker

Navigate to **Asset Management > Broker Network** and click the magnifying glass icon on your Broker(s). You will see that there is a major upgrade available. Click the yellow info icon next to the text and read the information.

To start your update, connect to your Broker(s) via SSH. We will utilize `asgard-updater` to perform the update. First we need to check if a newer version of the `asgard-updater` is available. If you get the highlighted output, you have already the newest version installed (the version might differ from the output here):

```
nexttron@broker:~$ sudo apt update
nexttron@broker:~$ sudo apt install asgard-updater
Reading package lists... Done
Building dependency tree
Reading state information... Done
asgard-updater is already the newest version (1.0.15).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

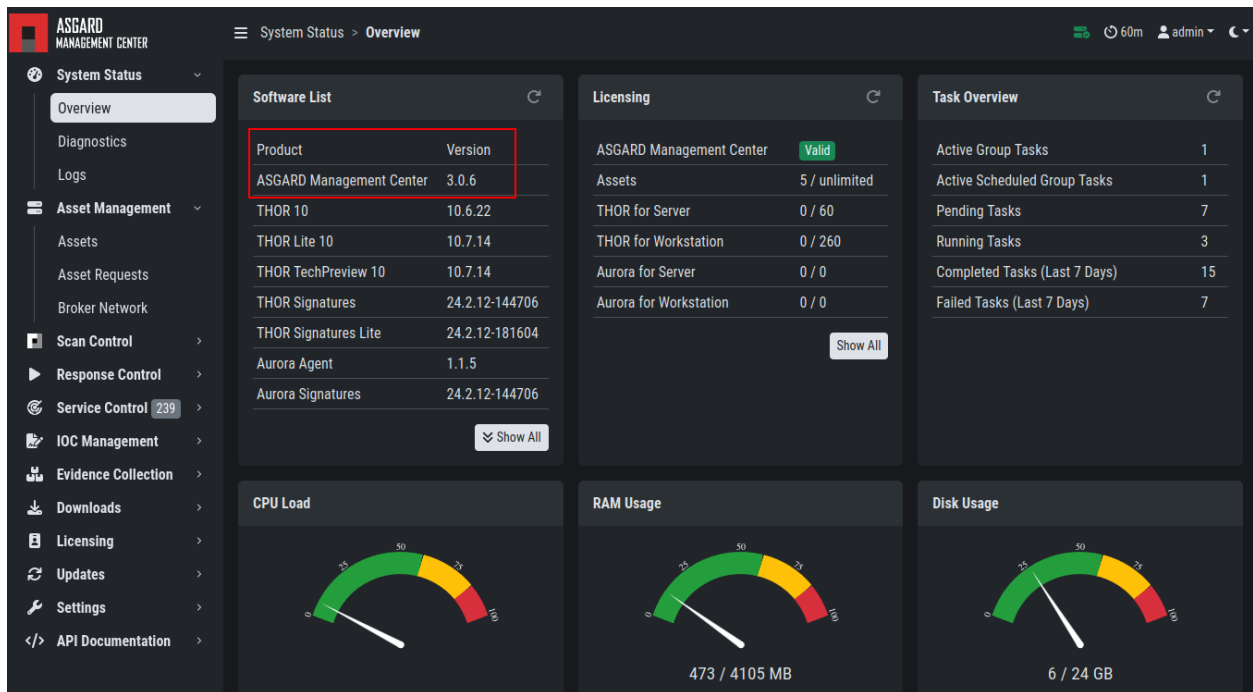


Fig. 8: Management Center Version

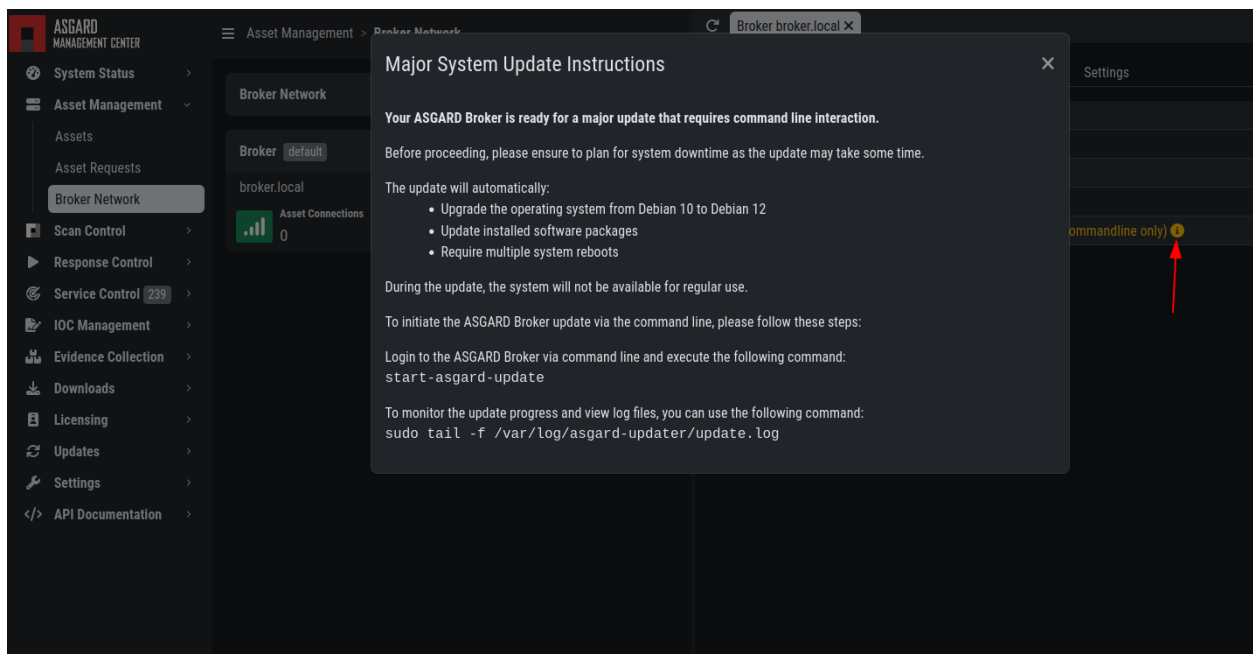


Fig. 9: Instructions for Broker update

You can now run the asgard-updater with the following command:

```
nexttron@broker:~$ start-asgard-update
```

The server running your Broker(s) will now restart multiple times. It is important to not interrupt the update process and let the server do all the tasks. You can, however, see if any errors occurred during the update or just observe at what stage the update is.

Run the following command to see the status of your update:

```
nexttron@broker:~$ sudo tail -f /var/log/asgard-updater/update.log
```

Note: Since the update is downloading many packages of the debian base system, the process will take a while. Your Broker(s) might be online throughout the update sporadically, but we still advise to wait until the update is finished before changing anything on the system.

The update is finished if you are seeing the following lines:

```
nexttron@broker:~$ sudo tail -f /var/log/asgard-updater/update.log
2024-01-16T14:20:54.253032+01:00 broker asgard-updater[667]: Upgrade finished.
↪Deactivating service...
2024-01-16T14:20:54.259176+01:00 broker asgard-updater[667]: Removed "/etc/systemd/
↪system/multi-user.target.wants/asgard-updater.service".
```

Your update is now finished.

ASGARD Gatekeeper

Navigate to Asset Management > Broker Network and click the magnifying glass icon on your Gatekeeper. You will see that there is a major upgrade available. Click the yellow info icon next to the text and read the information.

To start your update, connect to your Gatekeeper via SSH. We will utilize asgard-updater to perform the update. First we need to check if a newer version of the asgard-updater is available. If you get the highlighted output, you have already the newest version installed (the version might differ from the output here):

```
nexttron@gatekeeper:~$ sudo apt update
nexttron@gatekeeper:~$ sudo apt install asgard-updater
Reading package lists... Done
Building dependency tree
Reading state information... Done
asgard-updater is already the newest version (1.0.15).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

You can now run the asgard-updater with the following command:

```
nexttron@gatekeeper:~$ start-asgard-update
```

The server running your Gatekeeper will now restart multiple times. It is important to not interrupt the update process and let the server do all the tasks. You can, however, see if any errors occurred during the update or just observe at what stage the update is.

Run the following command to see the status of your update:

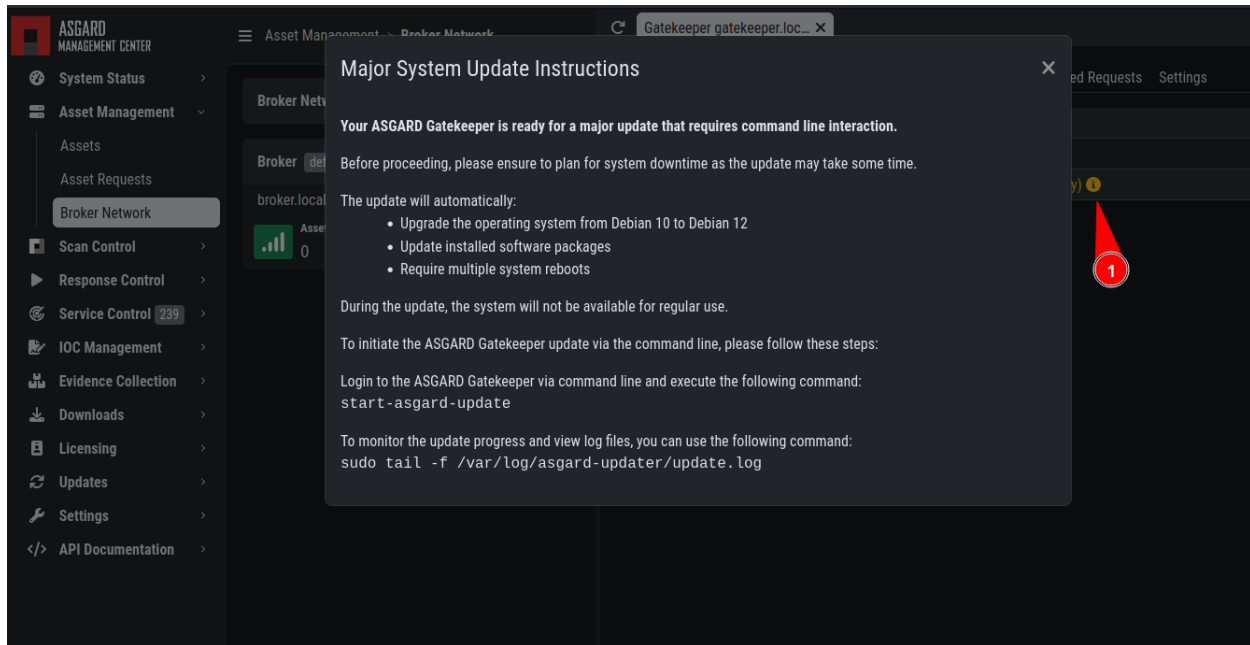


Fig. 10: Instructions for Gatekeeper update

```
nextron@gatekeeper:~$ sudo tail -f /var/log/asgard-updater/update.log
```

Note: Since the update is downloading many packages of the debian base system, the process will take a while. Your Gatekeeper might be online throughout the update sporadically, but we still advise to wait until the update is finished before changing anything on the system.

The update is finished if you are seeing the following lines:

```
nextron@gatekeeper:~$ sudo tail -f /var/log/asgard-updater/update.log
2024-01-16T14:20:54.253032+01:00 gatekeeper asgard-updater[667]: Upgrade finished.
↳ Deactivating service...
2024-01-16T14:20:54.259176+01:00 gatekeeper asgard-updater[667]: Removed "/etc/systemd/
↳ system/multi-user.target.wants/asgard-updater.service".
```

Your update is now finished.

ASGARD Lobby

Navigate to System Settings > System Upgrade in your Lobby's web interface. You will see a big notice with the headline Major System Update Available. If this is the case, your Lobby is ready for the major update.

To start your update, connect to your Lobby via SSH. We will utilize asgard-updater to perform the update. First we need to check if a newer version of the asgard-updater is available. If you get the highlighted output, you have already the newest version installed (the version might differ from the output here):

```
nextron@lobby:~$ sudo apt update
nextron@lobby:~$ sudo apt install asgard-updater
```

(continues on next page)

The screenshot displays the ASGARD LOBBY web interface. The left sidebar contains navigation links: System Status, Assets, My Settings, System Settings (highlighted in red), Logout (admin), and ASGARD Lobby Status. The top navigation bar includes links for Users, Roles, Lobby, TLS, NTP, Syslog, and System Upgrade (highlighted in red). The main content area is titled 'System Upgrade' and features a 'System Information' table and a 'Major System Update Available' section.

System Information	
Hostname	lobby
Lobby Version Installed	1.1.0
Lobby Version Available	1.1.0
Database Version	1:10.3.39-0+deb10u1
Operating System	Debian GNU/Linux 10 (buster)
Last Config Backup	2024-02-14 08:41:08

Major System Update Available

Your system is ready for a major update that requires command line interaction.

Before proceeding, please ensure the following:

- Perform a full system backup (e.g. by creating an image or snapshot)
- Plan for system downtime as the update may take some time

The update will automatically:

- Upgrade the operating system from Debian 10 to Debian 12
- Update installed software packages
- Require multiple system reboots

During the update, the system will not be available for regular use.

To initiate the ASGARD Lobby update via the command line, please follow these steps:

Login to the system via command line and execute the following command:

```
start-asgard-update
```

To monitor the update progress and view log files, you can use the following command:

```
sudo tail -f /var/log/asgard-updater/update.log
```

Fig. 11: Instructions for Lobby update

(continued from previous page)

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
asgard-updater is already the newest version (1.0.15).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

You can now run the asgard-updater with the following command:

```
nexttron@lobby:~$ start-asgard-update
```

The server running your Lobby will now restart multiple times. It is important to not interrupt the update process and let the server do all the tasks. You can, however, see if any errors occurred during the update or just observe at what stage the update is.

Run the following command to see the status of your update:

```
nexttron@lobby:~$ sudo tail -f /var/log/asgard-updater/update.log
```

Note: Since the update is downloading many packages of the debian base system, the process will take a while. Your Lobby might be online throughout the update sporadically, but we still advise to wait until the update is finished before changing anything on the system.

The update is finished if you are seeing the following lines:

```
nexttron@lobby:~$ sudo tail -f /var/log/asgard-updater/update.log
2024-01-16T14:20:54.253032+01:00 lobby asgard-updater[667]: Upgrade finished.
↳Deactivating service...
2024-01-16T14:20:54.259176+01:00 lobby asgard-updater[667]: Removed "/etc/systemd/system/
↳multi-user.target.wants/asgard-updater.service".
```

Your update is now finished.

KNOWN ISSUES

You can find a list of known issues in this section. There are no known issues at this point.

5.1 ABN#001: Placeholder

Introduced Version	Fixed Version
x	y

Placeholder Text.

5.1.1 ABN#001: Workaround

Placeholder Text.

TROUBLESHOOTING

Nothing to troubleshoot.

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